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VOLUME VI.

Edited by E. T. BROWN



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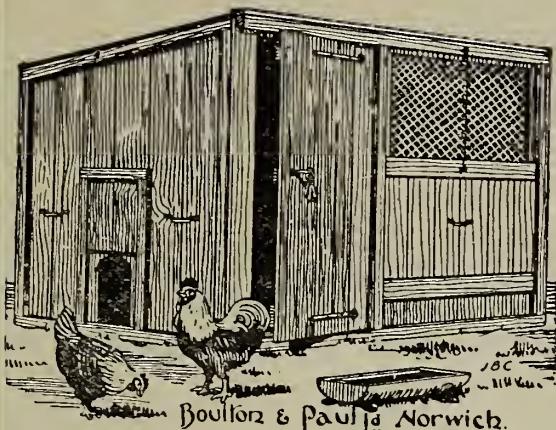
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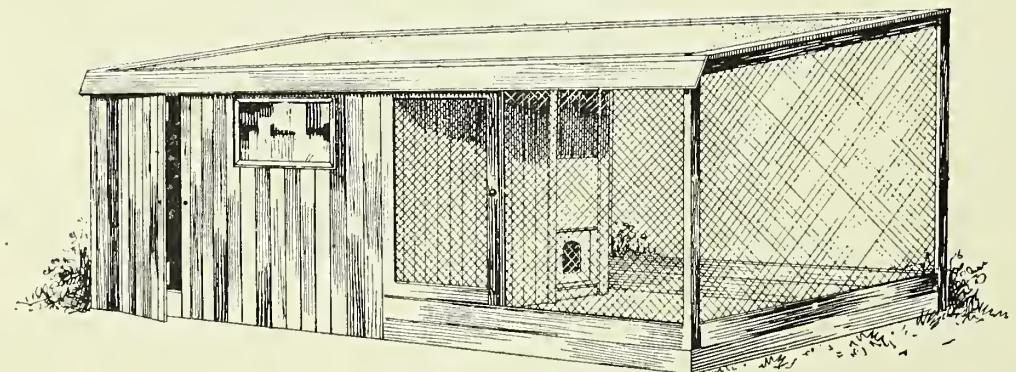
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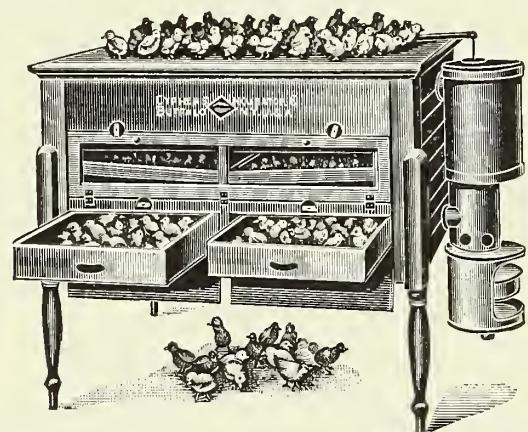
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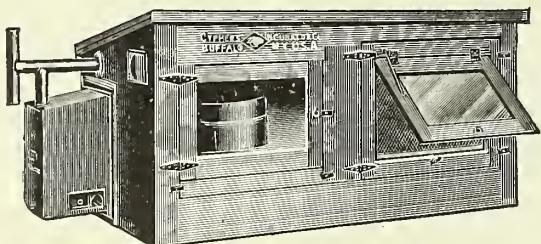
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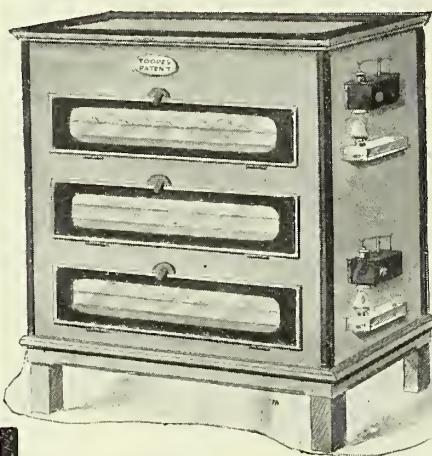
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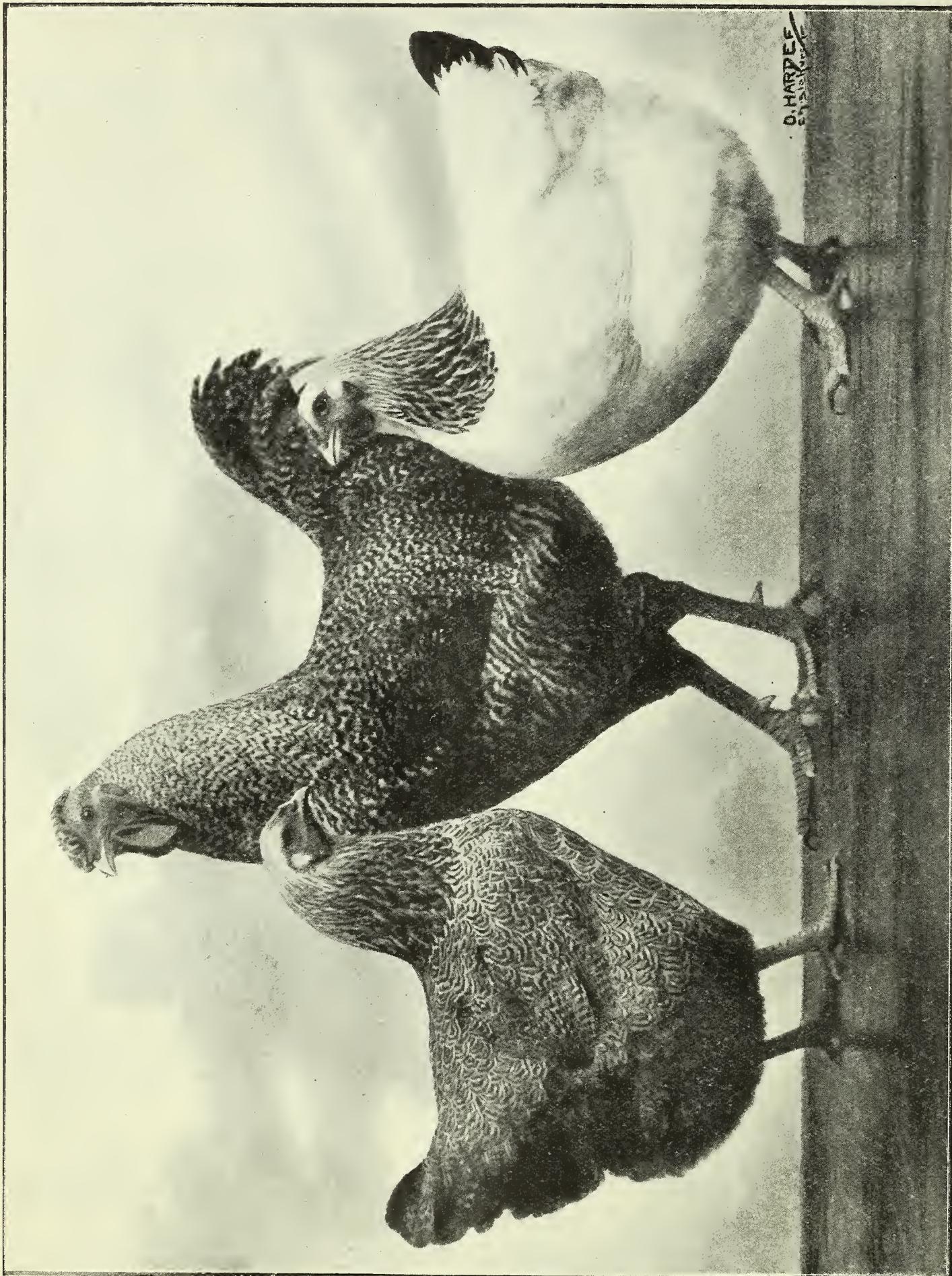
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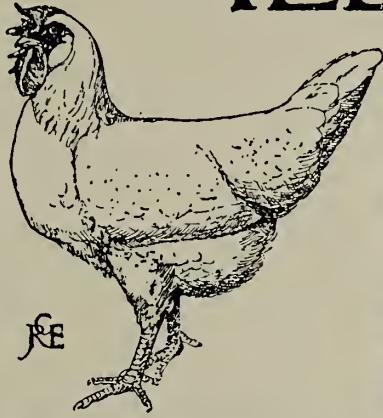
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THE ILLUSTRATED POULTRY RECORD



Vol. VI.—No. 7.

April 1, 1914.

Monthly, Price Sixpence.

DIARY OF THE MONTH.

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The Editor would like to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered by experts in the several departments. The desire is to help those who are in difficulty regarding the management of their poultry, and accordingly no charge for answering such queries is made.

The Annual subscription to the ILLUSTRATED POULTRY RECORD at home and abroad is 8s., including postage, except to Canada, in which case it is 7s. Cheques and P.O.O.'s should be made payable to the ILLUSTRATED POULTRY RECORD.

The ILLUSTRATED POULTRY RECORD is published on the first of every month. Should readers experience any difficulty in securing their copies promptly they are requested to communicate immediately with the Editor.

The latest date for receiving advertisements is the 20th of the month preceding date of issue.

The utmost care is exercised to exclude all advertisements of a doubtful character. If any reader has substantial grounds for complaint against an advertiser he is requested to communicate at once with the Editor.

The Business Side.

"Hope springs eternal in the human breast," and well it is that such should be the case, even though oftentimes there is a disregard of past experience. Hence we find that every year people appear to be surprised when there comes, as there must be, a sudden drop in the price of eggs, just as if it were something that had not been expected. No one can tell when this fall in values will take place, and it usually hits some one hard, the producer least of all. In this case it is not like falling from a ladder, the sudden stop that hurts, but the fall itself. This year the time for this annual event was later than usual, and high prices were maintained right through January and well into February, due to a remarkable shortage in foreign supplies, which, up to a given point, fell almost to half of what they were in the same weeks of 1913. It was not lessened production, for in some parts of Northern Europe the winter has been a very mild one, and hens have begun to lay earlier than usual, but to a big increase in German demand which fell off somewhat last year. That country has been drawing largely on Italian supplies, so much so that for several days there were none of these offered in London, with a consequent steadyng of prices. Undoubtedly, high rates here have attracted shipments, and quotations in several instances of Danish and French were higher than for English and Irish. What the next few weeks will reveal we must "wait and see." No one can surely prophecy the course of events.

The 1912-1913 Laying Competition.

By an unfortunate circumstance last month, for which an apology is due to readers, the Utility Club's summary of the Harper Adams Competition which ended in October, was omitted in that issue. That is remedied in the

present number, and we are also enabled to give "Statistician's" interesting review, which fills some gaps in the College Report. To that we call special attention, more especially as to the breed results. Too much stress is generally laid upon the performances of the winning pens, and in doing so what is of greater moment is ignored, namely, the average of groups which may represent the entire flock of a poultry keeper. It would be another matter if all could be brought up to the standard of the most productive, but we know that will never be. Except for any breeding influence the value of a half-dozen exceptional layers is very small indeed, and it is a question whether these are of the value hitherto assumed, in many cases without proof, for breeding purposes. Whatever leads to a fuller and clearer realisation of the facts of the case will make Laying Competitions of greater usefulness. Another point brought out in the first of the two diagrams is that the breed productiveness is by no means so great as is often supposed.

Still Foxes.

Although not much has been said lately as to losses of poultry-keepers by foxes, the question is still a burning one in many parts of the country, and the tide of opposition is surely rising, even though for the moment it is doing so silently. It is no use Hunt Committees ignoring it on that account. The only outbreak has been on the part of one Master whose sport was spoiled because someone had the courage to trace a false scent across country, leading the hounds utterly astray. Bad language breaks no bones, and does more harm to the user than the subject. It is no more "un-English" to do this than to enjoy your sport at someone else's expense. In fact, the latter is the act to which that misused term may more fitly be applied. We understand a Bill is in course of preparation to be presented to Parliament for the protection of poultry-keepers. What its terms are, and what chance it has of passing we do not know; probably if the former were effective the latter would be very small. Yet a remedy must be found in one way or another.

Fowls as Trespassers.

The ownership of any domesticated animals involves responsibility for any damage they may do, and the onus is upon the owner in case he allows them to wander beyond the confines of his own domain. The mere fact of trespassing itself is not sufficient to recover penalties. There must be actual damage and consequent loss. This has been again brought out in a case recently tried in one of the Yorkshire County Courts, in which the honours, however,

were even, in that a fine was imposed of £5 upon both the plaintiff and defendant, by reason of the fact that the jury came to the conclusion that if the fowls of one had been guilty, the rabbits of the other had wrought an equal amount of injury. The only persons who scored over the business were the lawyers. The fact, however, remains that compensation can be recovered if fowls range upon other people's land, though in many cases the manorial benefit would more than recompense. That would be difficult to assess.

The Poulters' Company.

Everyone will join in congratulating Mr. C. E. Brooke upon his appointment again to the Mastership of the Poulters' Company of London, which position when he first held it nearly twenty years ago he made notable by inducing the court to do something practical for the industry with which it is associated. Those were the days when table poultry was first receiving a mead of the attention it deserves. We do not know what Mr. Brooke has in mind to signalise his second term of office, but feel sure some good result will accrue. That there is plenty to be done in this direction everyone will agree, and if he is able to give an impetus to the development of table poultry production on advanced lines, systematised more than has been the case in the past, he will render great service. The last year or two has seen a steady advance in prices of good poultry, and as is by no means unlikely, there may speedily be a large reduction in the volume of foreign supplies, it is all the more important that the country shall be made independent of outside sources, which may be deviated at any time. We look, therefore, to the new Master of the Poulters' Company for a lead in this direction.

Egg Records.

We are so obsessed with the idea that it is unprofitable to keep a hen for egg production after her second year, and in the main such appears to be correct, that any evidence to the contrary is very valuable, as it would be of manifest advantage in many ways if the duration of life could be profitably prolonged. In the Hawkesbury (New South Wales) competitions, 1910 to 1913, tests were made in this direction with the following results:

	1st yr.	2nd yr.	3rd yr.
Cuckoo Leghorns (6 birds)	123.7	168.0	123.8
White Leghorns (30 birds)	209.4	149.9	123.7
Langshans (6 birds)	198.7	158.3	123.7
Black Orpingtons (18 birds)	202.8	156.2	118.9

Whilst what individual birds accomplish is of much lesser importance than in the case of larger flocks, the former may be suggestive. Professor James Dryden, of Oregon, reports that

one of his White Leghorn hens has a record of 664 eggs in three years, namely, 1st year, 240; 2nd, 222; 3rd, 202, and that in another case 691 eggs were produced in four years. Upon this question further experiments would be very valuable. It may be that one of the future developments in laying competitions will be for prolongation of laying, not merely what is accomplished in the first season. If there is any virtue in heredity a hen with such a record should be valuable in the extreme.

Agricultural Course for Parsons.

California claims to lead the way in many directions, specially in possessing the greatest poultry centre in the world, that at Petaluma. The state named has recently set an example which might be copied with advantage, namely, organisation of a ministers' week at the Farm School associated with the California State Agricultural College, the object of which was to acquaint ministers with the agricultural problems and practises of their times, so that they may be intelligently informed in the business of the people whom they serve. Among other subjects dealt with was poultry raising, the lectures on which were so popular that some of them had to be repeated. This is an excellent idea. We have had courses for schoolmasters which have undoubtedly been of considerable value, and the more of them there are the better. If in addition County Councils could provide a parsonic course the effect would not be to enlarge the knowledge of the temporary students only, but also to make clearer the special difficulties and opportunities of each section of the community.

The Virtue of Early Laying.

As confirmatory to the evidence obtained by the Harper Adams Competition, which in its turn supports the contention of Dr. Raymond Pearl, namely, that the early layers are the prolific hens, Miss Murphy in the Journal of the

Department of Agriculture, gives most important statistics as to the influence of early laying upon the total production. Eight hens which in the Irish Competition of 1912-13 laid 40 or more eggs in the first three months, produced 199 to 209 in the entire year; eight hens which laid 10 to 22 eggs in the first three months gave totals of 92 to 99 eggs in the year; and eight hens which laid 0 to 7 eggs in the first three months produced from 39 to 60 in the year. The table given is most complete, and we hope it may be continued in future competitions but on a fuller basis.

Statistical Omissions.

In another column are given figures taken from Part V of the Agricultural Statistics for 1912, giving particulars of the number of poultry in various countries. It is surprising that in the British and Irish returns no record is given of the number of poultry in the United Kingdom, although a British census was taken in 1908 and in Ireland that is done every year. Poultry form farm live stock just as much as sheep or pigs. The sense of proportion is evidently not fully developed.

Chicken Rearing Experiment.

We publish elsewhere particulars of the experiment carried out by Mr. F. G. Paynter during the past season at Haslington Hall, near Crewe, under the auspices of the Board of Agriculture and Fisheries. It is too late for us to discuss in this month's issue the various points raised in the quotation given, or the results that have accrued, but we hope to enter fully into this question in the ILLUSTRATED POULTRY RECORD for May. The brief analysis of the figures given, which we have been able to make, shows some very startling facts, but we must ask our readers to wait until the May issue for a complete discussion of the results and value of this experiment.



An Excellent Rearing Ground.

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PRIZE WINNING POULTRY BREEDERS IN ONTARIO.

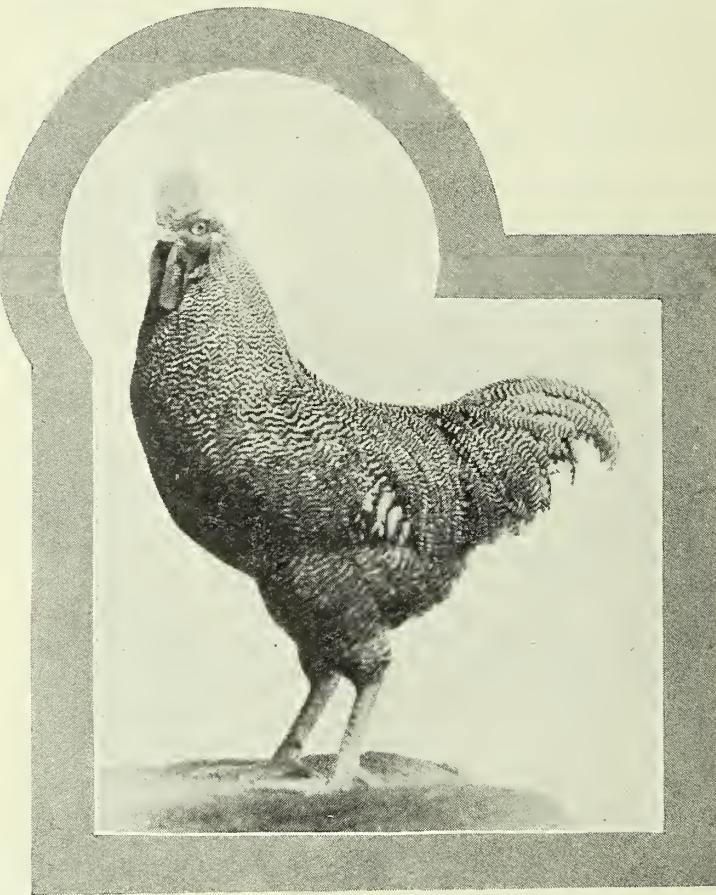
By WALTER JAMES BROWN, Aylmer (West), Ontario, Canada.

THE Province of Ontario is gradually becoming an important breeding centre for high-class poultry. This part of Canada is fortunate in at least three respects, namely, it has the kind of people who have inherited from their British ancestors a love for live stock; the climate is suitable for live stock production of a vigorous and satisfactory type, and the soil yields the kind of foods and provides the conditions essential to economic live stock keeping. For some years Ontario has been the chief source on the continent of North America from which is drawn the prize-winning horses, cattle, sheep, and swine at all the big shows. Canadians exhibit their stock year after year at the largest shows in the United States and secure the most valuable prizes; but the breeders in the United States do not return the compliment.

In the estimation of poultrymen the two leading poultry exhibitions in North America are the Madison-square Garden Show, New York City, and the Poultry Exhibit of the Ontario Winter Fair at Guelph, Ontario. The third show in importance is said to be the Buffalo International and the fourth the Canadian National Exhibition at Toronto. The Buffalo show is held in January each year, while the Toronto show, of which poultry and pet stock is but a feature, is held in August and September. In 1913 an effort was made to hold a big live stock exhibition, including poultry, in Toronto during the latter part of November. This is a scheme that the people of Ontario are receiving with mixed feelings. The Ontario Winter Fair at Guelph is always a great success; but unfortunately the conditions are such that the exhibits cannot be accommodated properly and the crowds cannot be handled; but Toronto is only fifty miles away and to bring on the Toronto Show a week or two ahead of Guelph with a view to dividing the attendance seemed like treason. It is true that at the Canadian National Exhibition grounds there is ample space and there are fine brick buildings in which to display all kinds of live stock, poultry, etc., while it would be difficult to find a city on the continent of North America that can handle crowds of people better than Toronto. At any rate the first attempt of Toronto to hold a big winter live stock show was a success as far as the exhibits were concerned; but the attendance was not satisfactory. When the bills were all paid the deficit threatened to wipe out the show. A poultry show in

winter in this part of the world is far more attractive than at any other season of the year on account of the excellent plumage of the birds and the greater leisure of the exhibitors and the visitors.

There is another factor to be considered in accounting for the success of Canadian poultry exhibitors. It is this: practically all of the foundation stock of all the breeds, except those originated in the United States, is imported by Canadians from Great Britain. The British breeders charge good prices for their birds; but they fill the orders for Canada with stock of



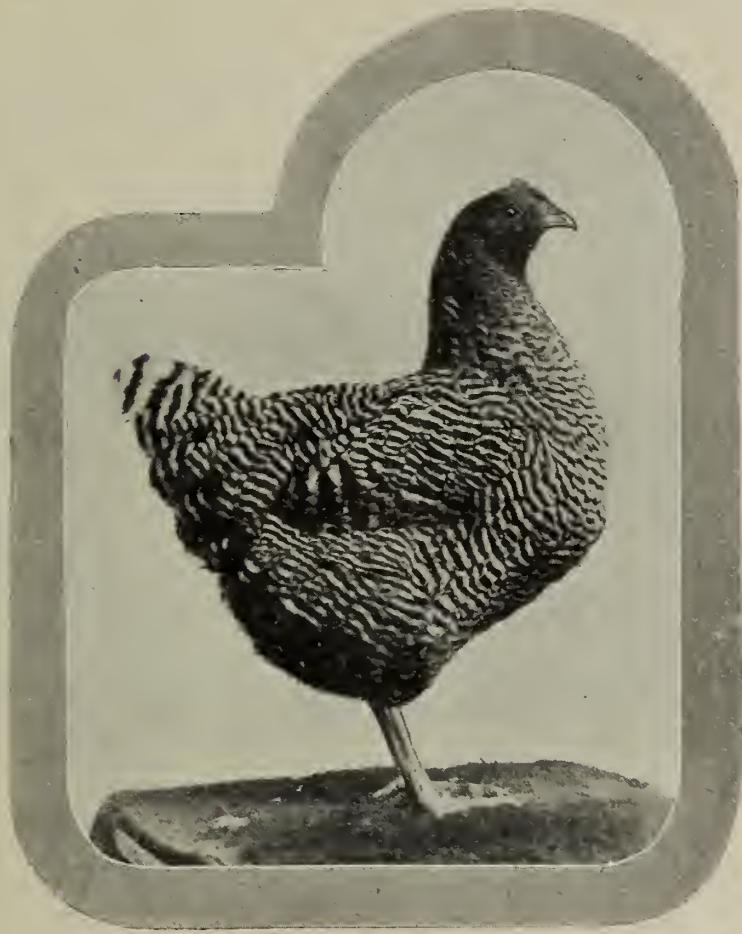
A Barred Rock Cockerel.

A noted Canadian Winner. [Copyright]

excellent quality. The Canadian breeders who specialize in United States breeds of poultry, such as, Plymouth Rocks, Wyandottes, etc., do not hesitate to spend large sums of money to secure birds that will win prizes at the leading shows. Sometimes as much as \$200 is paid for a single bird.

While there are several hundred breeders of fancy poultry in Ontario the tendency is to give special attention to the development of utility stock. Canada has recently become the highest

price egg market in the world and the best eggs sold in Quebec, Montreal, Toronto and Winnipeg come from Denmark. The demand for eggs and poultry throughout Canada is so



A Barred Rock Hen. [Copyright.

A winner of many prizes.

insistent that skilled breeders find that mere form and feathers are not sufficient. To be worthy of consideration a hen must be able to lay a profitable number of eggs and, perhaps, produce cockerels that will provide good dinners for hungry people. As soon as a poultry breeder wins a few prizes at one or two of the leading exhibitions and advertises that he has eggs and stock for sale his mail is filled to overflowing with enquiries from all parts of the country. If the breeder proves his integrity, guarantees his output and establishes confidence in himself the best customers are the farmers who are anxious to improve their stocks of birds. The rise of the Canadian poultry breeder is, therefore, often extremely rapid and sometimes if he is skilled and is a good man for business he makes a fortune.

Among the more recent poultry enthusiasts in Western Ontario are two young men of Aylmer. Both are beginners and are cleaving their way through the wilderness of competition towards success. Mr. Fred. D. King devotes his attention to black Minorca and black Hamburg fowls, while Mr. William Powell, jun.,

raises only Barred Plymouth Rocks. The photographs accompanying this article show a few of the birds of these two establishments.

In 1913 Mr. King went to the Buffalo International Poultry Show with twenty-seven entries and secured eighteen first prizes, eight second and one fourth prize. In 1914 he again attended this show and took with him forty-four birds. He won thirty first prizes, eleven seconds, two thirds and one bird was not placed. He won also the "Chamber of Commerce Cup" valued at \$100 for the best bird in the show.

Mr. Powell is trying to develop a strain of Plymouth Rock fowls that will contribute largely toward reviving the intense interest that was taken in poultry production in this province some years ago. He is working for the 200 egg hen and the eggs must weigh not less than two ounces each. The birds must not only look well but must weigh well. A mature male should weigh 10 to 11 lbs., a cockerel 9 lbs. or better, a hen 6 to 7 lbs. and pullets 5 to 6 lbs. A bird that lays well and fattens well will not be unpopular with Canadian poultry raisers.

The "Cornell" style of poultry house seems to be the favourite in southern Ontario. This house has a shed roof, an open and curtained



A Black Hamburg Cock.

A famous Canadian Winner. [Copyright

front, it opens to the south, has a window in the west side and a door in the east side. Sometimes a ground floor is used, sometimes a board floor and frequently a cement floor.

TENDENCIES TOWARDS DEGENERACY IN THE BREEDS OF POULTRY.

By EDWARD BROWN, F.L.S.

THAT there is a constant tendency to degeneracy as a result of domestication, and especially of modern methods of breeding, cannot be questioned. How far this is due to curtailment of the migratory instinct of birds, and to keeping them upon the same soil generation after generation, it is impossible to say or to suggest. That both have their influence may be accepted. We know that crops require change of soil. Upon the best potato or corn lands, change of seed is important to secure a heavy yield, in spite of whatever manure may be applied. This is a subject demanding careful investigation. Food, also, must have a powerful influence. When birds are at full liberty, and have to find the greater part of their nutrition, they are compelled to take a large amount of exercise, which in turn promotes digestion. If they are restricted in their range, provided with food which is not equally good as nature's diet, and for which they have to expend very little in the shape of physical effort, there follows a weakening of the muscles and organs, as of the skeleton, which in process of time leads to enfeeblement. Further influences, in addition to those named below, are the breeding from immature stock, artificial hatching and rearing, forced laying and growth, and bad conditions generally. I am not suggesting that these cannot be counteracted, but that will only be by recognition of these influences, and constant efforts to prevent them. It is not what takes place in one or two years, but the accumulation of influences we have to guard against. To be forewarned should be forearmed. The importance of this question cannot be too strongly emphasised, as weakened parents mean chickens low in vigour.

EXHAUSTED BREEDS.

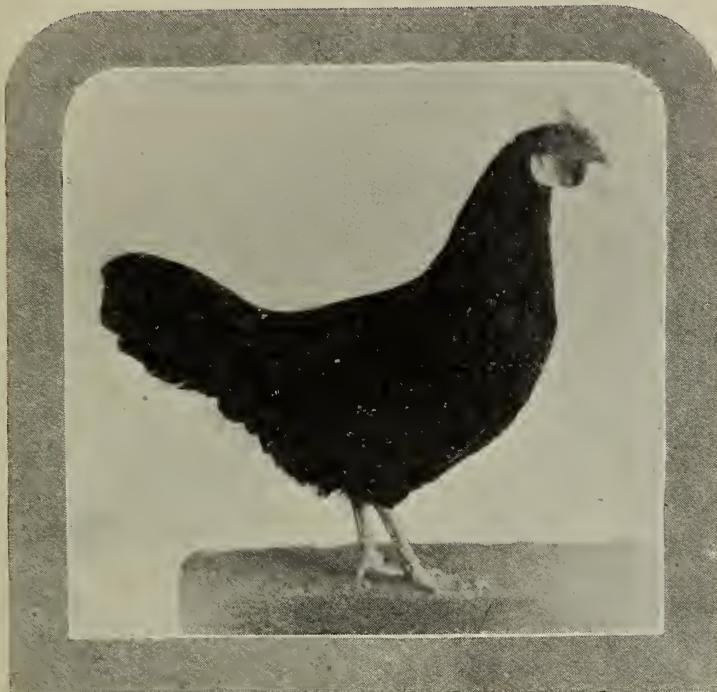
What is evident, as I have previously shown, is that amongst animals and birds we have records of species which served their day and are now extinct, whilst others are undergoing the same process. In connection with poultry, several examples can be cited of breeds which have risen into prominence, but have passed into entire or semi-oblivion. Notably the Spanish, the Brahma, and the modern Langshan, come to our minds in this connection. With the greater perfection of racial quality there is increased refinement, to secure which a measure of in-breeding is unavoidable. Probably any of these breeds would have merely maintained its

position for a limited period, but it is unquestionable that the system which is followed, when ultra refinement or undue intensification are adopted, expedites the result to which reference has been made. It is interesting to remember that in making selection for breeding we eliminate the least perfect, and in many cases these are the more vigorous in constitution. Every poultry-breeder will have had experience in proof of this statement, and, as Darwin in one of his works stated, variations are often an indication of dormant qualities exerting themselves.

LINE BREEDING.

The meaning of this term is that the birds chosen for reproductive purposes shall be restricted to individual members within the same line of descent. As a consequence there is a measure of relationship, though that may be more or less remote. It is, however, present. Such is distinct from in-breeding, for in the latter case the relatives are close in blood. That line breeding in the hands of a careful poultryman makes for improvement of external characteristics, as in fact does in-breeding under more limited conditions, is undeniable. Many of our best races of poultry, as of other stock, have attained their present stage of perfection in this way. As an example may be cited the white Leghorn in Denmark. Imported first about 1880, even though subsequent introductions have been made, it is evident that the stocks are mainly of the same line of descent. That is also true of the Pekin duck in Britain. What, however, has to be taken into account is the distribution over a considerable area, together with the keeping and rearing under different sets of conditions, the effect of which appears to be considerable. What is here meant is that, supposing chickens from the same original stock are scattered widely, there would be much less danger resultant from mating together birds in, say, the fourth and subsequent generations, than if these had been continuously bred on the same place. In this way the fourth stock of breeders would be third cousins. Such a system properly carried out, and all the time with rigid selection for constitutional vigour, is a safe one for the breeder who is able, or finds it worth his while, to give the necessary time and attention to the work. For egg and flesh production my own opinion is that it has not the same value as for racial points. Professor

Eugene Davenport shows clearly the disadvantages of line breeding in his work "Principles of Breeding." "The chief danger in line breeding is that the breeder will select by pedigree,



A Black Hamburg Pullet [Copyright

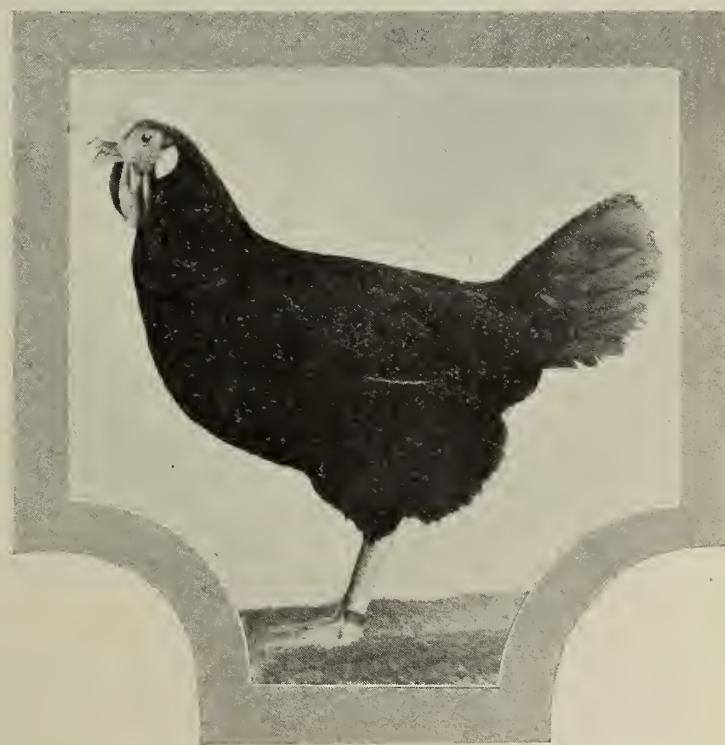
A prize winner at the Buffalo International Show, 1914.

abandoning real individual selection. A line-bred pedigree is valuable or dangerous in exact proportion as the individuals have been bred up to grade. . . . The only requirement is, not to abandon individual selection. A pedigree is not a crutch on which incompetence can lean; it is a guaranty of blood lines."

IN-BREEDING.

There is a strong tendency at the present time on the part of scientists and experimenters to urge the adoption of close-breeding, largely due to the necessity for this system in working on Mendelian lines. That in-breeding has had a powerful influence in perfecting breeds and families is true. What we have to remember is that the impulse given relates to the bad as well as the good characters and qualities. Therefore, if powerful in one direction it is equally so in the other. Where the main object is production of eggs and of flesh, the question is entirely different, for these depend more upon natural vigour, plus capacity, than anything else. Whatever weakens that is fatal to success. So far as I am aware there is no really in-bred family which has for long maintained its productiveness without out-crossing, or even the introduction of alien blood. I do not propose to discuss this question at length, for, whilst in the hands of skilled breeders, more

especially those who are able to operate upon a large scale, and to make selection from a considerable number, in-breeding may from time to time be adopted, the risks of loss of vigour and fertility are so considerable, that the ordinary farmer or poultry-breeder is well advised to avoid such a method. Already there is far too much of it, with degeneracy as a result. Even though there might be apparently no immediate evidences of loss, it must again be pointed out that the ultimate issue will be unsatisfactory. A few years ago some duckers in the vale of Aylesbury were greatly troubled by what is known as "soft bill" in the ducklings, which were unable to make their way out of the shells. Enquiry showed that these men had been buying drakes in a circle, and I suggested the cause to be close breeding. The introduction of fresh and more virile blood removed the cause and provided a remedy. In-breeding tends to enfeeblement and loss of resistant powers, so that the birds are unable to combat attacks of disease germs to the same extent as when more naturally bred, and are more amenable to malign influences. The degree of domestication, that is, in respect to methods and conditions, will determine rapidity of influence. What may be of limited effect when fowls are on range, and the great law of survival



A Single Comb Black Minorca Hen.

A Canadian winner since 1912. [Copyright

of the fittest has fuller play, is completely changed when selection for mating is artificial, and conservation of the least fit are practised. Epidemics, however, and also general mortality,

are but the expression of inability to withstand attacks of enemies, in which case those which succumb are the least fit.

CONSTITUTIONAL VIGOUR.

The forces which are at work militating against the maintenance of physical vigour and functional activity, though the latter is sometimes temporarily present to a degree when the former is absent, are so many and varied that the questions involved are of supreme importance to every poultry breeder whatever the scope of his operations. It is not too much to state that in this direction there has been a distinct retrogression within recent years, not only in the United Kingdom but elsewhere. I am firmly of opinion that the increases of loss by death in shell during the embryonic period may to a large extent be explained in this way: that the huge mortality of chickens in our own land, as in America and Belgium, has arisen in part from the same cause; and that what is known as "blackhead" in Turkeys, which has so smitten this branch of the industry in the eastern areas of the United States, though enhanced by other influences, have been aggravated by loss of constitutional vigour in the parent stock. A further result is the immediate loss which takes place in other directions, notably fecundity of and fertility in eggs, and flesh development, though the latter is less evident.

Some suggestive observations have been made by Mr. C. A. Rogers, at Cornell University, U.S.A., bearing upon this point. These experiments were conducted over a period of two years, the results of which are very striking. Flocks of white Leghorns and Plymouth Rocks proved so unequal in growth that they were divided into strong and weak, respecting which observations were carefully tabulated. It was found (*a*) that in all cases the weaker birds consumed more food per dozen eggs produced than the stronger, probably due to the latter proving better foragers; (*b*) that the number and value of eggs produced and the profit made were greater from the strong flocks than the weak; (*c*) that the mortality in adult birds was, in the main, greater in the weak than the strong; and (*d*) that the percentage fertility of eggs, of chickens hatched, weight of chickens when hatched, and of chickens living at the end of six weeks, were in favour of the stronger birds. Such data is confirmed by practical experience, though not hitherto tabulated so completely.

EVIDENCES OF VIGOUR.

As to the external evidences of constitutional vigour, I quote from a Bulletin published by the Maine Experiment Station, U.S.A., in which it is stated: "The bird of high constitutional

vigour will have a thrifty appearance with a bright eye, and clean, well kept plumage. The head will be broad and relatively short, giving in its appearance plain indications of strength. It will show nothing of the long-drawn out, sickly, crow-like appearance of the head, which is all too common among the inhabitants of the average poultry yard. The beak will be relatively short and strong, thus correlating with the general conformation of the head. Comb and wattles will be bright in colour and present a full blooded, vigorous appearance. The body of the bird of high constitutional vigour will be broad and deep, and well meated, with a frame well knit together, strong in the bone, but not coarse. In fowls of strong constitution and great vigour all the secondary sexual differences will usually be well marked. In other words the males will be masculine to a degree in appearance and behaviour, and the females correspondingly feminine. It must, however, be noted that this last is a general rule to which there are occasional exceptions." To what is here stated may be added activity of habit, alertness of vision, and capacity for foraging, with pronounced ability in respect to self defence. It may, however, be pointed out that in the table breeds of poultry of the highest grades, the constitutional vigour is not so great under all conditions as with the egg producing and general purpose races.

SIMPLICITY IN SELECTION.

In my work "Races of Domestic Poultry" an attempt was made to discern how far external characters are indicative of and related to economic qualities. It is admitted that reliable knowledge upon this question is limited in the extreme. My present purpose is to show that the multiplication of arbitrary characters, and breeding for their development, are antagonistic to the rules of practical breeding and productivity. It is here where the great cleavage between the fancier-exhibitor and the business poultryman arises. The standards adopted by the former, increase and magnify minor points, which to a very large degree determine success in exhibitions. As a result economic qualities are sacrificed. Elaboration in this direction tends to greater variation. It is for that reason in Germany and Holland distinct Standards of Points for Utility Poultry have been adopted from those promulgated by fanciers, as the latter are often found to be in inverse ratio to the productive qualities, and frequently opposed to natural vigour. What we have to aim for is simplification rather than complexity, to reduce the number of selective characters rather than increase them, which latter explains why highly bred stock are often the least profitable.

Professor Davenport has said that "the breeds in which many requirements have been enacted contemporaneously have had a chequered history full of ups and downs, and the end is not yet—nor will the end be in sight until the custom is abandoned of requiring at the same time so many points as to put the matter beyond the range of practical selection." There are many examples among the respective races of poultry proving the truth of what is here stated. Exaltation of existing and introduction of new arbitral points have ruined many breeds, and are destroying the productive qualities of others.

The practical breeder of poultry should first of all make selection in respect to constitutional vigour; the second consideration is suitability in accordance with the product, whether eggs or flesh, he desires to secure; third, suitability of the birds to their environment; and, lastly, type and external characters, taking care that the latter shall not be antagonistic to what is stated before. In this manner racial distinctions can be maintained without sacrifice of more important factors. That is a reversal of what has hitherto been generally adopted, but which has led us far astray.

STOCK DUCKS AND THEIR MANAGEMENT.

 WHILE the keeping of poultry has increased enormously during the last few years, it cannot be claimed that duck-breeding has developed to the same extent. Why this is so is rather difficult to explain, since duck-breeding, when conducted on the right lines, is undoubtedly one of the most profitable

ing and rearing ducklings, and this idea deters many from taking up this work. Certainly the general conditions are factors not to be altogether disregarded; for instance, ducklings grow much more rapidly when reared on high gravelly soil than those kept on swampy, undrained land.

On most farms a few ducks are kept, which are



A Large Flock of Aylesbury Ducks.

[Copyright]

branches of poultry-keeping as the demand for early ducklings at good prices is well maintained. It is very often thought that it is only possible, under certain conditions, to be successful in breed-

sold at any time of the year at prices ranging from two shillings and sixpence to three shillings each. This leaves a very small margin for profit, since ducks are very gross feeders. Unless they are ready

for market when in their duckling feathers, some months must elapse before they are again in the same edible condition; therefore the crucial point is to get ducklings ready for killing at nine or ten weeks old, and this stage must be attained early in the year, when prices rule highest. To achieve this, eggs must be obtained in sufficient time to allow hatching to commence in October. This is not always easy of accomplishment; in fact it is a very difficult matter, unless the previous management has been directed towards laying the foundation for the autumn and early winter supply of eggs. Young ducklings must be relied upon for this supply, as they commence to lay earlier than will those

imagined that any kind of food will do for ducks, and cases may be found where they are fed with the "swill" provided for the pigs. This is quite a mistaken idea, as sound, nutritious food is quite as necessary for ducks as for any other kind of poultry. Nothing of a fattening nature should be given, since grossly fattened specimens are very rarely good breeders.

Where the object is the production of early spring ducklings, Aylesbury, or Pekin pure, or a cross between the two are undoubtedly the best for the purpose. They should be mated early in September, running one drake with three ducks, and the eggs



Another View of the same Ducks. (see previous page).

Copyright

that were hatched during the previous year. Undoubtedly February-hatched ducks are the most reliable, and when those are mated with two-year-old drakes, there is small danger of weakness in the progeny, since age is possessed by one parent. The ducks selected for breeding purposes should be large and from good parent stock, with no sign of hereditary disease or other weakness. Their early treatment should be all in the direction of building up a large frame and good constitution, and the food should be of a nature that will promote stamina, so that when their time arrives for breeding they are able to bear the strain. It is frequently

are generally fertile after the first ten or twelve, although they should be tested from time to time, and, if not satisfactory, two drakes may be run with five ducks. Access to water is necessary for the breeding stock. This not only assists fertility, but strengthens the young ducklings. A large pond, or running stream, is not absolutely necessary, as, so far as the actual swimming is concerned, a tank sunk in the ground, or any form of artificial bath will answer the purpose; although under these conditions no natural food is to be obtained, and consequently more food has to be supplied. Ducks are excellent foragers, and where they are fortunate

enough to have a farm, village green, or garden to roam over, they will obtain much in the way of worms, grubs, etc., which are helpful in maintaining health and vigour in breeding stock.

After mating, the feeding of ducks is of the utmost importance, since all else is in vain if the eggs are not produced at the right time, and everything must be done that will assist to this end. A good plain diet, strong in nitrogenous matter is necessary. Food very largely governs both the quality and number of eggs produced. The soft food, which should be given as early as possible after daylight, may consist of barley-meal and middlings, with the addition of meat scraps of almost any description, provided that the meat is fresh and well boiled, and given in small quantities. Butchers' offal—lean meat being preferable—horse-flesh, or anything else of a like nature are all excellent for ducks, being strong in the elements most needed for the production of eggs. For the evening meal there is nothing better than oats, wheat, or barley. When the birds are at liberty they can usually obtain all the green food that is necessary, but when the space is limited, vegetables should be supplied. Cabbages, lettuces, dandelion, turnip-tops, or anything of the sort will have a cooling influence, and tend to keep the ducks in perfect health.

It is frequently claimed that ducks are so ex-

tremely hardy that little or no housing is required. This, however, is quite a mistaken idea. What is suitable for the wild duck would be absolutely fatal for those under domestication. They do not in any way differ from hens so far as comfortable and sanitary sleeping quarters are concerned. The form of house, however, need not, perhaps, be of the same expensive description. Almost any kind of out-building can be utilised so long as it is weather-proof. If no buildings of this kind are available, or for those who prefer to make their own houses, it is a very easy matter. A duck-house need not be high, three feet being quite sufficient, provided that the floor space is ample, say, three square feet per bird. The floor should be raised about two inches above the earth, and made moveable so as to facilitate cleanliness. The house should be bedded out with chopped straw, chaff, or peat moss litter. Whatever sort of bedding is used, it is most important that it be regularly raked over and frequently renewed; inattention to this is a fruitful cause of disease, for ducks very soon become contaminated, hence the necessity for perfect cleanliness.

During the time that the eggs are required for hatching, the ducks should not be unduly disturbed nor moved from one place to another, as this tends to retard laying. Success, or otherwise, in rearing spring ducklings very largely depends upon the method of management of the parent stock.—J. S.

ON THE INTEGRITY OF POULTRY-FARMERS.

By A. T. JOHNSON.

THE other day I was the unfortunate recipient of a complaint reflecting upon the integrity of poultry-farmers. It was an old tale, so old and familiar indeed in its main significance that we hardened sinners, no less than the general public, have long ago ceased to concern ourselves very much about it.

Here is the gist of the story: A lady had for many years been in the habit of purchasing a flock of pullets every September for winter laying. She had always got them from the same man who was a farmer and a "treasure," and the birds were mongrels. But they invariably laid well all winter—though they only cost 2/9 apiece—and their owner had ever been able to give her best friends some fresh eggs at Christmas, a little kindness which was afforded additional zest when these friends had fowls of their own which did not lay when they were wanted to. Now, the farmer who supplied the pullets emigrated, and his patron had to go elsewhere. Not without some trepidation she consulted the advertisements in a poultry paper in which, by the bye, she had previously read a warning against buying even cross-bred pullets

for laying at less than 3/- each. Coming upon an announcement of "First-cross pullets for winter laying" at various prices from 2/9 to 4/3 each, she decided to go in for a dozen at 3/9, believing that by paying a shilling more per bird she would get fowls of at least equal value to those mongrels which did so well at 2/9. And they were, to judge by the scale of prices advertised, close up to the best grade "actually laying" offered by the poultry-farmer. But her instinctive fears were justified, for the birds were rubbishy little things, not worth more than 1/6 each, and one of them subsequently developed into a cockerel! Redress was as hopeless as it usually is in such instances, and the incident meant that one more stone had been laid upon that cairn of roguery which is the brand of the poultry-farmer in the eyes of so many.

Now that is not a solitary instance, as I have said. We have all suffered from that form of imposition. It is going on all round us every day. We pay what we consider to be a fair price (and 3/9 is a fair price for ordinary cross-bred or first-cross pullets that will lay within reasonable time) and nine times out of ten we

are swindled. It is all very well to say, "adopt the deposit system." The latter is a useful protection when purchasing breeding stock and in many other ways, but the person, like the lady referred to, who wants a few utility birds feels that there should not be cause for him or her to go through the business connected with the deposit system. The amount involved does not seem large enough to warrant one's doing so, and it, the deposit system, implies that the birds are being sent on approval, which again suggests the possibility of paying carriage two ways and perhaps being put to cartage expense as well. There is unfortunately every reason why one should protect oneself against fraud, but it is annoying to have to exercise so much caution over these small orders. And had I been indiscreet enough to recommend my above-mentioned friend to protect herself by adopting the deposit system next time she placed an order, she would probably have snapped out the obvious, if feminine, retort that she preferred to deal with honest men and that the very fact of the deposit system being in existence was a nasty reflection upon the integrity of poultry-keepers, etc. And who can say that she would not be speaking a great deal of truth?

Of course there is another side to the matter. Some customers will grumble at anything. There is no satisfying them. But, on the whole, I think it must be generally acknowledged that buyers have very good reason for their attitude towards advertisers, and it is not their fault but their misfortune that they often have to suffer undeserved the sting of being considered "mugs."

It is said that the smell of a stable undermines a man's integrity in time. Our "doggy" friend, again, is not infrequently a haunter of the shadows. But does the poultry industry contain fewer rogues, I wonder, than the profession of horse-dealing? Can anyone who is not a fool have sufficient faith in the average poultry-farmer who advertises, say, "laying pullets," to give him an order without the thought that he might be swindled coming across his mind? I think not. Yet we can send off for a dozen handkerchiefs, a side of bacon or a case of whisky without feeling that we are running the risk of being duped. We can believe the haberdasher when he says his handkerchiefs are "genuine linen,"; we can take our wine-merchant or distiller at his word, but can we believe the poultry farmer when he says his pullets are "genuine, March-hatched, first-cross Houdan-Black Orpingtons"? I—and I am not a whole-hearted optimist, nor, I hope, am I one of the ultra cautious—I can send to my seedsman—to any seedsman—and order vegetable and flower seeds, confident that they will turn out to be pretty

much "as specified" in the catalogue. But can I, or anyone else, send to a stranger for a sitting of eggs without a lingering thought at the back of our minds that we shall not be quite sure as to what we have bought until those chickens are hatched, if not grown up? Ninety out of a hundred people will give the answer in the negative.

I have used the word *rogue* in connection with this stain upon our industry, but, perhaps, it were nearer the truth to say that most offenders are merely men who, by nature or force of circumstances, have allowed their consciences to get a bit rusty. The out-and-out rogue will not scruple to send into your healthy yards a bird that is in the last stage of roup; or, having got your money, he may not send you anything at all. We can generally deal with such miscreants, but as to the other fellow, though he has slipped over the borderland of honesty, he has seldom stepped quite far enough to enable you to make it worth your while to go for him. He knows that quite well. Yet the margin between what he ought to have done and what he has done to meet his obligations is wide enough to put a little more profit into his own pocket and to take a little out of yours. He may swear that the pullets he has sent you are March-hatched (though you know they never saw the light until the end of May) and have some plausible excuse ready to account for their being a "bit backward." On one occasion I remember a resourceful vendor of pullets telling me, on my informing him that the birds he sent me were nearly three months younger than specified, that he always "retarded" his pullets; they eventually made much better layers! Or, again, what is one to do with a man who picks up mongrels from farmers and markets and who calls them first-crosses?

This practice of developing into a dealer when one's own supply has run short is what I had in mind when I said that a vendor of pullets may have lapsed into dishonesty through force of circumstances. I do not disparage the dealer, nor do I imply that his integrity is of grosser metal than other people's. But the man who buys "culls" by the crate in the market-place, and passes them on to the public under a false description and with the assumption that they have been bred on his own farm, and what not, is playing a very low game indeed. It is often so hard to keep up his own supply, and so easy to buy "local stuff" at eighteenpence a head which, with judicious advertising, can be palmed off on the public at three shillings, that there is perhaps, not so much wonder after all that our industry is so infested with this polite—but not intentionally criminal, Oli, dear no!—species of scamp.

THE LAYING COMPETITION OF 1912-13, AT HARPER ADAMS' COLLEGE.

BY "STATISTICIAN."

THE report of this competition recently published justifies to some extent the delay in its issue by the large amount of facts and figures given, which were worth waiting for. It is certainly the fullest of meat of any such report I have seen, although as noted below there are omissions which if the facts had been included would have put a fitting climax on to it. Those concerned appear to have done their work thoroughly, and deserve every credit for the excellent results achieved in the way of total and individual egg production, and the form in which the report is set forth. To obtain an average of 152 eggs from 600 birds shows not only that the birds were good, but that they were well managed. Doubtless many criticisms will be passed upon the food provided and method of feeding, as there have been upon the houses and runs. The fact is there, however, upwards of 91,000 eggs, weighing more than 4 $\frac{3}{4}$ tons, valued at £431 11s. 6d., were produced on 4 $\frac{1}{2}$ acres of land, working out at nearly £100 per acre. Well may it be said in the report that "a comparison of the returns obtainable from one acre of grass land when stocked entirely with poultry, and the same area used for milk production, shows that a much greater return per acre can be produced by the poultry." "On the basis named that is to put it mildly."

I have nothing to do with who and what birds won the prizes, but desire to delve into this report to see what the figures teach generally.

The fact is self-evident that the competition was not and was never intended to be a profitable undertaking, otherwise it ought not to have received a grant of £500 from the Development Fund. That almost paid for the equipment, so we may write it off. At the same time the nature of the competition compelled arrangements which on a business basis would be folly. No hen can stand 18s. on her back as a capital charge.

Labour under such circumstances must necessarily be an expensive item. To trap nest 600 hens for 365 days is no joke. Hence the cost, £144, is not excessive. In fact no Poultry Farm run on small-run lines could be conducted for much less, and I imagine there must have been a large amount of help not charged. Where the legitimate expense is heaviest is in the food, namely £256, which

works out at a fraction under 8s. per head. If additional cost to this extent has to be incurred in order to secure a high average of eggs, the views of many must be altered. Practically 8s. to feed a hen for 12 months would be ruination. When we add labour, food and cost of marketing the total is £430, and the total value of the eggs sold, which were evidently disposed of at good prices, was £431 11s. 6d., so that the margin was about a halfpenny a bird. It is evident that if rent, interest on capital, and depreciation had been charged the loss would have been heavy. Laying competitions are, therefore, no more examples to follow than are poultry shows. Extravagance in food is unprofitable for production, though it may be justified for advertising by forcing records.

A careful examination of the figures given in the report reveals the fact that the honours of the competition go to the breeds which score in the prize list. Of the six gold medals and 1st class certificates five are awarded to White Wyandottes and one to White Leghorns; of the silver medals and second class certificates, one is awarded to Black Orpingtons, two to White Leghorns, and three to White Wyandottes. That the White Wyandottes have come out best in respect to performances of individual pens is true, and although the Silver Campine is first in breed averages, as seen in the following table, there was only one pen of six birds, whereas the White Wyandottes which are second had 33 pens, or 198 birds, so that for all practical purposes the latter are a good first. Considering what White Leghorns have done elsewhere it is surprising that this breed should only occupy the fifth place.

In Diagram 1 I show the average value of eggs per hen in the respective breeds, and in table 2 is given the total and average numbers of eggs.

In reports of future competitions it would be desirable that the system of giving breed numbers and averages as in the above table be introduced. The real importance of these contests is there and not in the scores of individual birds or pens of birds.

It would be most interesting if the monthly breed totals were worked out as indicating the relative production in each of the thirteen four weeks into which the year was divided. That is an unfortunate arrangement, and actual months would be more easily understood. For instance

DIAGRAM 1: - BREED AVERAGES PER HEN IN ACCORDANCE WITH TOTAL VALUES OF EGGS.

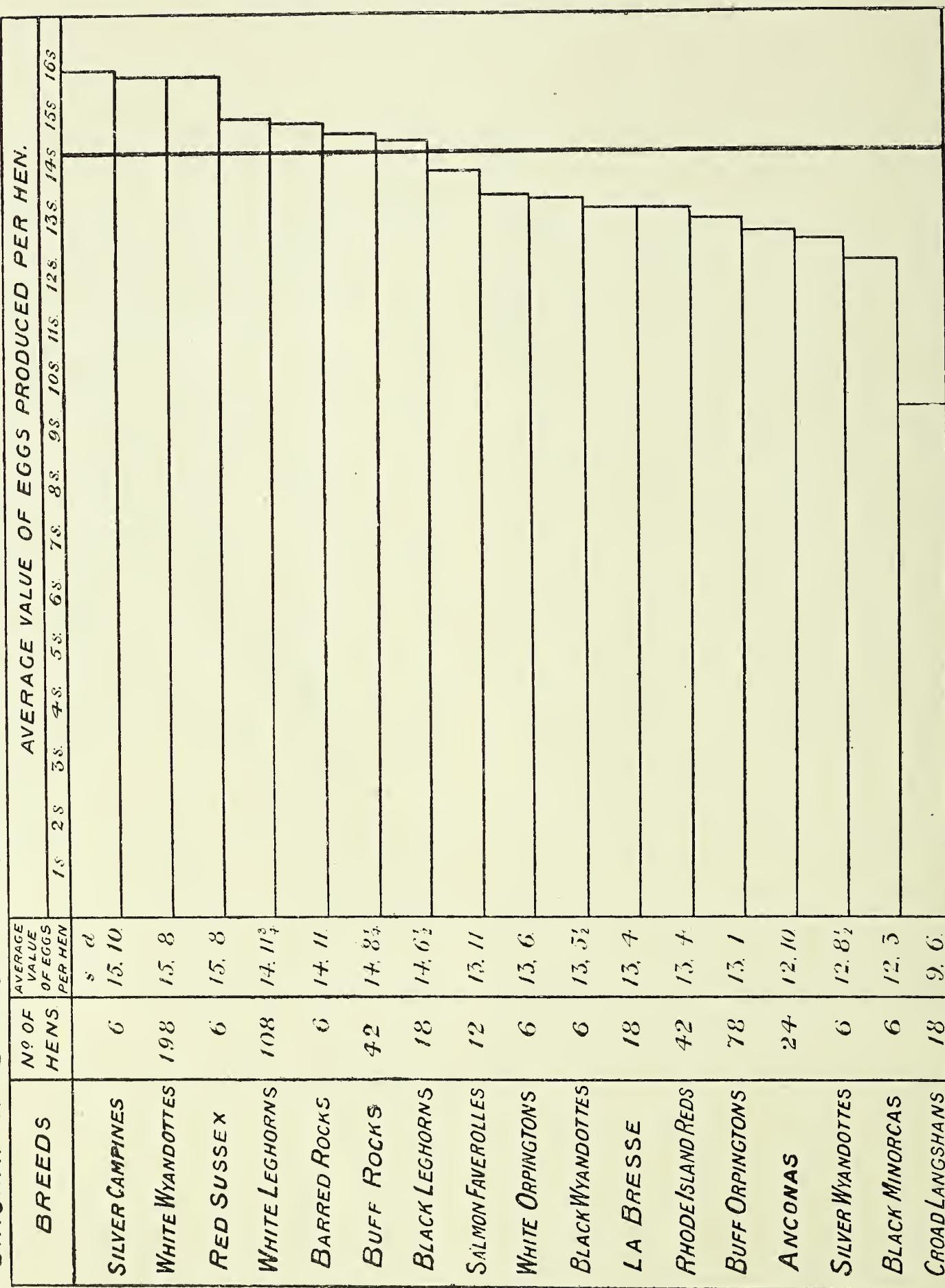


TABLE I. BREED NUMBERS AND AVERAGES.

Order.	Breed.	No. of Birds.	Total No. of Eggs.	No. of Eggs per hen.
1	Silver Campines	6	1,014	169.00
2	White Wyandottes	198	32,609	161.7
3	Barred Rocks	6	960	160.0
4	Red Sussex	6	924	156.66
5	White Leghorns	108	16,904	156.52
6	Buff Rocks	42	6,478	154.24
7	Black Leghorns	18	2,746	152.55
8	Black Wyandottes	6	905	150.83
9	Silver Wyandottes	6	896	149.33
10	Salmon Faverolles	12	1,786	148.83
11	La Bresse	18	2,595	144.17
12	White Orpingtons	6	865	144.16
13	Black Orpingtons	6	829	138.16
14	Buff Orpingtons	78	10,541	135.14
15	Anconas	24	3,171	132.12
16	Rhode Island Reds	42	4,978	118.52
17	Croad Langshans	18	1,925	106.94

the sixth and seventh four weeks cover almost entirely the months of March and April, usually the heavy laying period, but there is nothing in the tables to indicate these dates. In table 2 I have repaired this omission. I should have liked to work out the total breed averages, as these could not fail to be highly instructive, but they would occupy too much space. What has been done, however, as an indication for future guidance is to take four of the leading pens, show the totals for each period, and give the average eggs for each hen. That is done in Diagram 2. In order, however, to show the periods, and the actual number of eggs, as well as the averages, I concentrate these facts in Table 2.

The pens recorded above were the exceptional layers. It is very interesting to note that in every four weeks of the entire twelve months there was a fair production. Even the White and Black Leghorns averaged, from October 15th to March 4th, 49.32 and 58.81 eggs respectively, and thus confirming what is stated in the report that the early layers are most prolific.

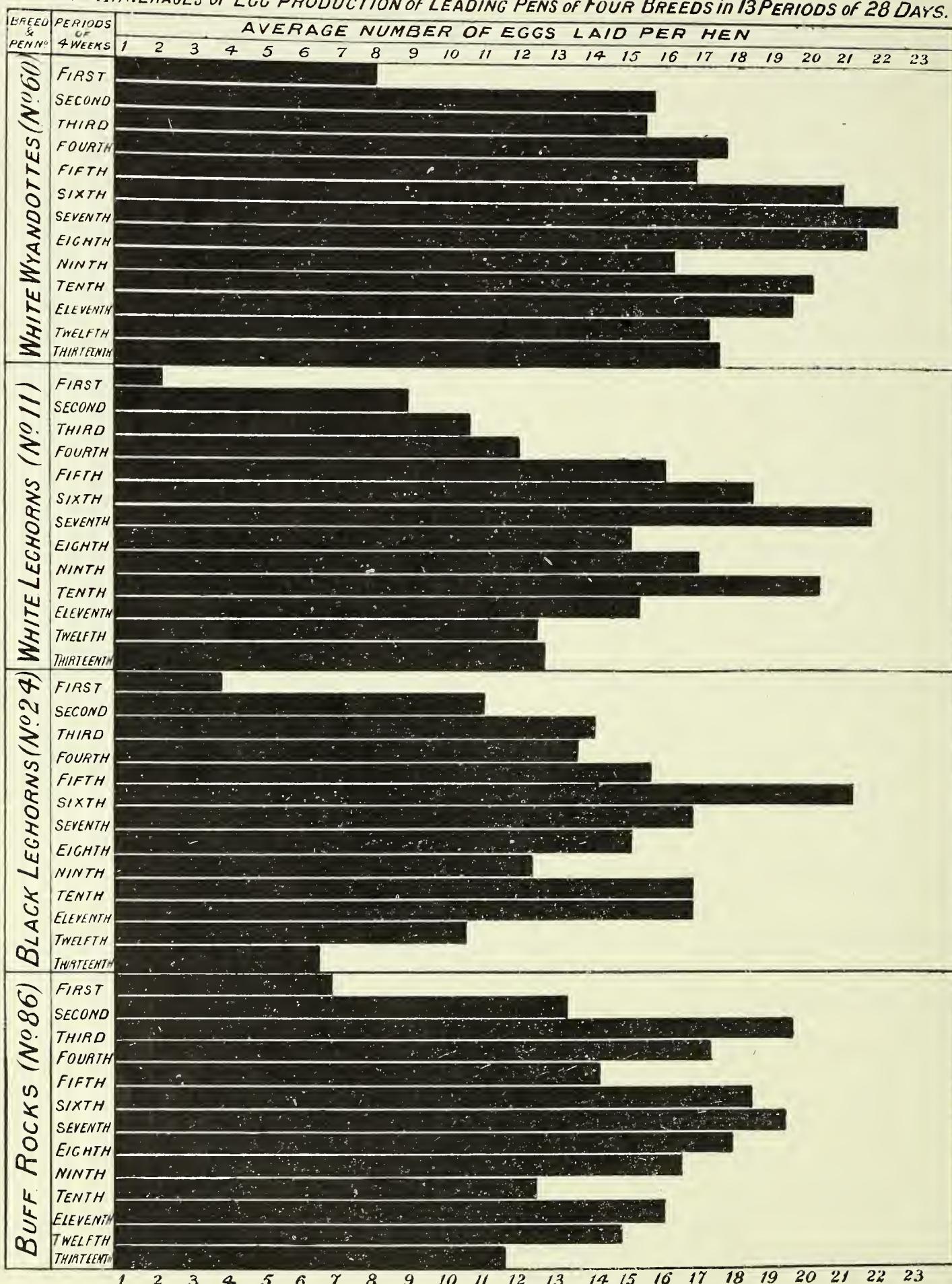
It is necessary to summarise a few of the other points in the report by reason of the exigencies of space. These are as under:

Of the 91,115 eggs produced, 69,666, or 76.46 per cent. were firsts, that is over 2 oz.; 21,342,

TABLE II. TOTAL EGGS AND AVERAGES FOR SELECTED PENS.

Periods.	Dates.	White Wyandottes.		White Leghorns		Black Leghorns.		Buff Rocks.	
		Total No. of Eggs.	Average No. of Eggs.	Total No. of Eggs.	Average No. of Eggs.	Total No. of Eggs.	Average No. of Eggs.	Total No. of Eggs.	Average No. of Eggs.
1912.									
1st 4 weeks	Oct. 15—Nov. 12	48	8.0	13	2.16	23	3.83	41	6.82
2nd ,,	Nov. 13—Dec. 10 1913.	94	15.66	53	8.83	67	11.16	81	13.5
3rd ,,	Dec. 11—Jan. 7	93	15.5	63	10.5	85	14.16	118	19.66
4th ,,	Jan. 8—Feb. 4	106	17.66	71	11.83	83	13.83	105	17.5
5th ,,	Feb. 5—Mar. 4	101	16.83	96	16.0	95	15.83	86	14.33
6th ,,	Mar. 5—April 1	126	21.0	110	18.33	129	21.5	112	18.66
7th ,,	April 2—April 29	134	22.33	134	22.33	102	17.0	116	19.33
8th ,,	April 30—May 27	129	21.5	90	15.0	98	16.33	109	18.16
9th ,,	May 28—June 24	101	16.83	100	16.66	63	12.5	86	16.33
10th ,,	June 25—July 22	121	20.16	122	20.33	102	17.0	76	12.66
11th ,,	July 23—Aug. 19	118	19.66	97	15.16	102	17.0	97	16.16
12th ,,	Aug. 20—Sept. 16	104	17.33	74	12.33	65	10.83	91	15.16
13th ,,	Sept. 17—Oct. 14	105	17.5	75	12.5	39	6.5	71	11.83

DIAGRAM II. AVERAGES OF EGG PRODUCTION OF LEADING PENS of FOUR BREEDS in 13 PERIODS of 28 DAYS.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

or 23·43 per cent. seconds, *i.e.*, 1½ to 2 oz.; and 107 or 0·11 per cent., that is under 1½ oz. The proportion of first is fairly good.

A most instructive record is the table of averages of birds commencing to lay at different times, as under.:

	Average.
Birds which laid 10 or more eggs in first month	187·5
Birds which laid at all in first month	167·7
Birds which did not lay for one month	161·4
Birds which did not lay for two months	135·8
Birds which did not lay for three months	106·3

One surprising fact is the high number of deaths. No fewer than twenty-six died or had to be killed, which is 4½ per cent., a high average for pullets.

With respect to body weight it is stated that the medium and light breeds proved more prolific than the heavy breeds. It is a pity the comparative weights of every bird is not given, as that would have provided material for an interesting study.

109 FOXES SHOT.

Steady Increase in the Number of Vulpicides.

Two years ago Lincolnshire farmers in the country of the Blankney Hunt claimed that they had killed 109 foxes.

Since then, two farmers at Welbourn, not far from Lincoln, are understood to have continued fox-shooting. They are believed to have had more than two dozen foxes last spring, one being shot down before hounds, though the Master did not discover the fact.

In the last frost a farmer who owns his own land shot seven foxes, and the frost lasted five days only. This farmer has also forbidden the Hunt to cross his land. It is asserted that the Hunt has nevertheless been on his fields twice, although he and his friends patrol the land with guns. He says that he has sometimes had to fire right in front of the riders before they would stop.

When they persisted in crossing, he sent a claim for £16 for damage done. He declared that five pounds' worth of wheat was destroyed in one field alone. As no payment was made, action was taken for trespass and damage. A valuation has now been agreed to. But the farmer still patrols his land, like the farmer in Cheshire, of whose activities with a gun on hunting day some account was recently given.

It is said that one farmer in the Welbourn district was turned off his holding for shooting a fox, and failed to find another farm in the county.

The farmer who has shot seven foxes and patrols his land has been told that his son will not get a farm.

The case for the Hunt seems to be that it is hard up. The Master has resigned, the cause stated being ill-health.

The important thing about this news from Lincolnshire is that half-a-dozen cases have now been reported of farmers openly shooting foxes, with the secret or open sympathy of their neighbours. These are men who are really farmers—that is farmers who keep poultry, not men who are poultry-keepers only. The poultry-keepers began the campaign against foxes in hunting counties where the Hunts do not pay satisfactorily for destroyed birds, and the farmers are now beginning to back them up. There are quite a number of people who are poultry-keepers only who regularly shoot foxes.

There are complaints of the overstocking of foxes from many districts. Most of the men who are shooting foxes are unknown to one another. They live in Yorkshire, Gloucestershire, Lincoln, Cheshire, Surrey, Warwickshire, and Worcestershire.

Welbourn in Lincolnshire is not the only Welbourn where the fox question has aroused interest. At Welburn (without the "o") in Yorkshire the sector and a hunting man lately met in a public debate on the benefits or otherwise of fox-hunting.

A typical case of oppression of the poultry-keeper by some Hunts—there are, of course, several Hunts which are most fair in their dealings with the owners of slaughtered poultry—is that of a victim in Kent. The lady poultry-keeper assessed the value of the selected layers that had been killed at the moderate sum of 3s. The Hunt offered 2s., and this only if the injured poultry-keeper would agree not to destroy foxes. That is to say, all her poultry, and all her labour and skill in breeding, rearing and selecting birds, was to be at the disposal of the Hunt's foxes at 2s. per bird! Two shillings is only the price of a dozen eggs, valuing them according to the season in which the birds were killed.

Nor was it a case of birds not being properly locked up at night. They were taken in the day-time, after breakfast in fact.

It is plain that if some of the recalcitrant Hunts do not mend their ways before next season there will be a marked diminution in the poultry population in certain districts.

Foxes are not being killed with the gun only. Several poultry-keepers have done away with a number of foxes by poison.—*Westminster Gazette*.

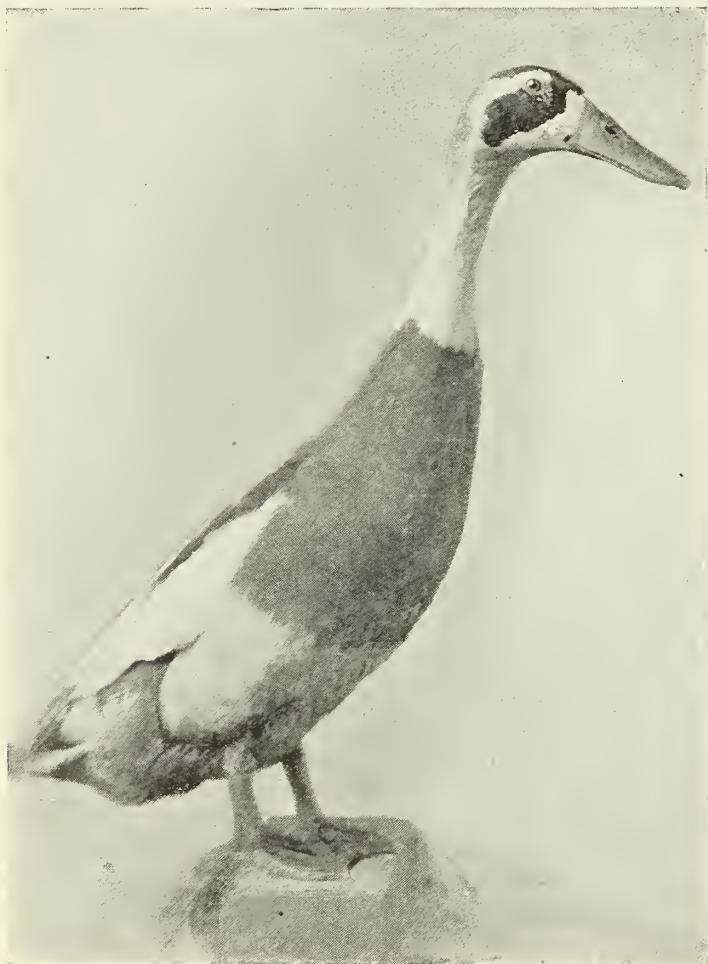
A Show fatality.

By the explosion of a boiler the Ontario show at Ottawa was wrecked. Ten men were killed or injured, and a large amount of stock, inclusive of poultry, were destroyed.

THE LEGHORNS OF THE DUCK FAMILY,

By E. I. FARRINGTON.

 INDIAN Runner Ducks have established themselves as profitable birds wherever there is a demand for duck eggs. As layers, they are worthy rivals of the best hens. My ducks began laying last spring as soon as the snow was off the ground, and were still at it the middle of September. Other years, when they have had plenty of room indoors, they have laid well during the winter. Their feet are very sensitive, however, and if they are obliged to run around in the snow the supply of eggs is cut off.



An Indian Runner Duck.

Copyright

The best strains of Indian Runners lay white eggs. It is only occasionally that I get a green egg. White eggs are preferred by most people, yet occasionally a customer is found who asks for green ones. When buying stock it is important to know that it comes from a white-egg strain. Ducks of this breed which lay 150 eggs a year are not at all uncommon. Many go above that figure.

The eggs are considerably larger than those produced by hens, running about six to a pound. They are also rich and two of them are equal to three hen's eggs in cooking. There is very little difference between hen eggs and Indian

Runner duck eggs, so far as flavor is concerned. The duck eggs are perfectly palatable, and few people would know the difference except for the size. Possibly the whites of the duck eggs are a trifle tougher than in hen eggs. Duck eggs of this sort are excellent for cake making and are especially fine when made into omelettes.

At present there is not a heavy demand in the markets, but usually it is not difficult to find private customers. For some time before Easter the prices quoted in the market reports run ten cents or more higher than for hen eggs. After Easter the duck eggs cost less than hen eggs of the best grade. They are not quite as easy to keep, perhaps, but many go into cold storage each year.

Full grown Indian Runners eat just about as much as hens and give larger returns in eggs, weight considered. It costs less to feed them, because they can be given mostly cheap mashes. My plan is to feed liberally in the morning, using a mash composed of wheat, bran, corn meal, and beef scraps, the bran being the principal ingredient. About ten per cent. of the whole is a satisfactory proportion of beef scraps. At noon I feed lightly on cracked corn, oats or wheat, whatever happens to be at hand. I give the birds another generous feeding at night, sometimes mash and sometimes whole or cracked corn.

Green food is necessary, and I supply it in the form of lettuce, which has gone to seed, rape, cabbages and spinach—truck from the garden. They need plenty of oyster shells and seem to crave ashes. I throw all the ashes from the furnace and kitchen range where they run, and they consume large quantities of the cinders. This is especially true of the laying ducks.

Water is not necessary, except for drinking purposes. Yet it is an advantage to have a little water for the birds to swim in or at least to dabble in. I keep an old sink filled with water for my flock throughout the summer months, except in spring, when they have access to a brook which later dries up. The sink must be cleaned out every day, for the bottom soon becomes covered with mud.

When the birds are confined to a house in winter, it is well to construct a light frame of laths to go over the water dish, the laths being far enough apart so that the birds can get their heads through. Otherwise they will play in the water and soak the floor or ground for two feet in all directions.

Whatever is used for a water dish, it must be deep enough so that the ducks can bury their beaks in it. When they eat soft feed the nostril openings are likely to become closed, causing the birds to suffocate, unless they can cleanse their beaks in water. While eating, they are constantly drinking.

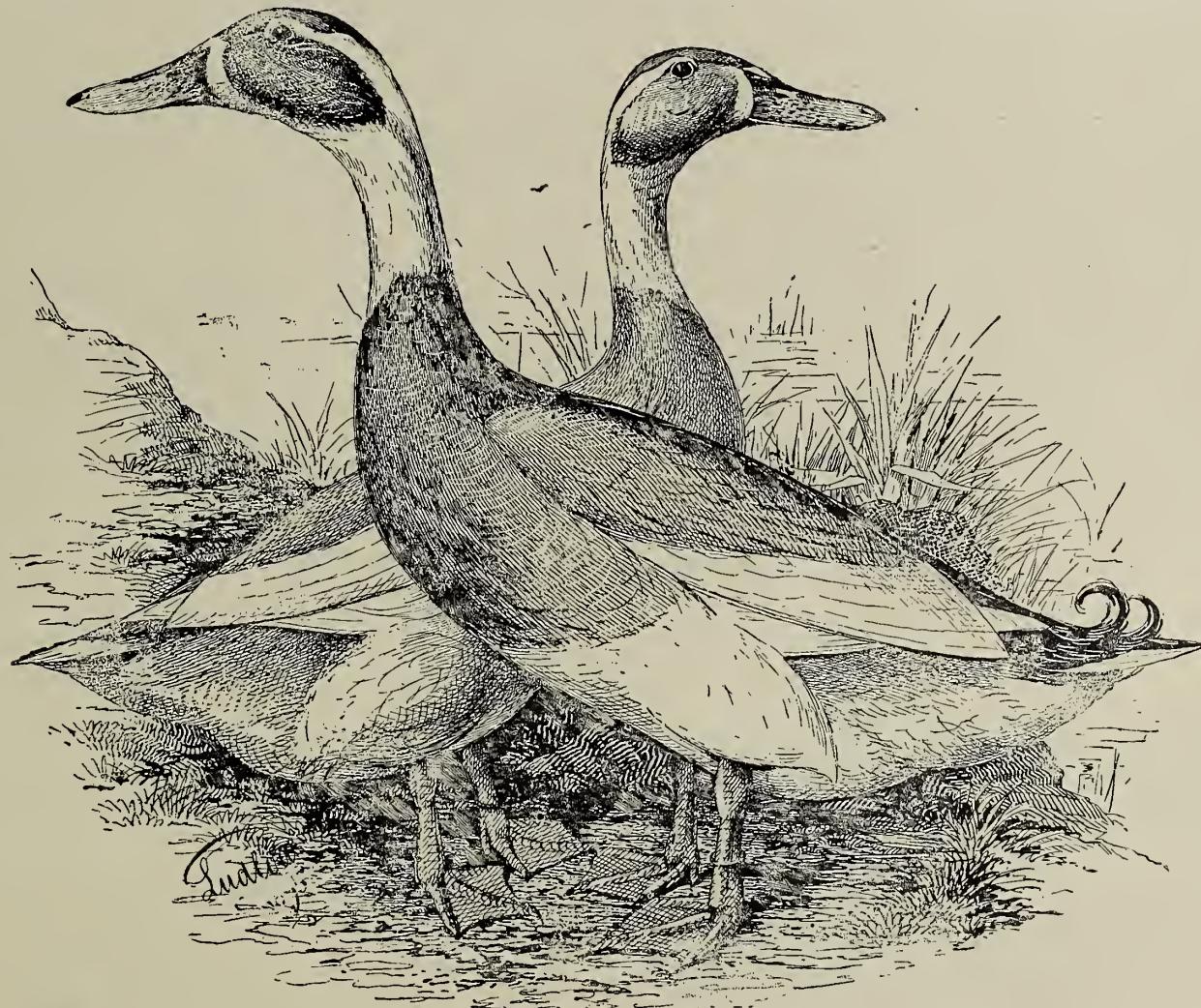
Indian Runner Ducks, like those of other breeds, can see in the night very much better than hens. Often on warm nights my birds do not go into their houses until midnight. I have frequently seen them roaming about when I was ready to retire, especially if the moon was bright.

It seems to me that these birds are much more intelligent than hens. They are easily trained and are very curious. Also, they have good memories. After being driven into a house a few nights in succession, they go in of their own accord. Often when they are slow in going into their quarters I simply have to speak to them or take a step or two towards them.

and with their stout beaks they could get a more generous downpour than the chicks. The latter stood around and let the ducks provide the grain.

Ducks and chickens should not be kept together in a small yard. The ducks foul the ground very quickly and make the food and water too dirty for the chickens, besides driving them away. Both kinds of poultry can be kept in a large grass yard or on free range if a covered rack or feeding box for the chickens is made, the openings being large enough for them but too small to admit the ducks.

Indian Runner ducks must be handled differently from other fowls. They have strangely brittle legs,



A Pair of Indian Runner Ducks.

[Copyright]

They seem to have dislikes, too. A little girl who occasionally visits us for a few weeks has aroused the antipathy of one old duck, and if she ventures into the yard, the duck lowers her head pugnaciously and drives her to the house on the run.

In the spring I installed a self-feeder in the orchard for some chickens. Several ducks were running about also, and to my surprise I soon found them operating the self-feeder in the most confident manner. They would push the bar around and eat up the cracked corn as fast as it fell;

which are easily broken, and so must not be lifted by the feet. The proper plan is to grasp them by the neck just back of the head. If they are to be carried far, a little support should be given the body with the other hand. The birds can be taken in the arms only at the risk of being fouled.

Cheap and simple quarters suffice for ducks, which have very warm coats. They should be tight, however, and free from both draughts and dampness. At the same time there should be no lack of fresh air. Openings to be covered with muslin curtains when the rain beats in are much

better than glass. Neither perches nor nests are needed or will be used. The birds sleep on the floor and either drop their eggs at random, or scoop out little nests in the straw. As a rule they lay their eggs before 8 o'clock in the morning, and it is well to keep them confined until that time all the year round. Occasionally an egg is found in the yards in the course of the day, and when the ducks have unlimited range, a number of eggs is bound to be lost.

Indian Runner Ducks make good mothers, and frequently steal their nests, usually bring off extra good hatches. They line their nests with their own feathers and like to sit out-doors. I had one duck sit beside a rock in the open field for the four weeks necessary to incubate its eggs.

Some growers report difficulty in raising ducklings, yet they are easier to rear than chickens. It is very seldom that I lose an Indian Runner, old or young. When eggs are hatched in a machine or under hens, though, it may be necessary to help some of the ducklings out of the shells, as the membranes are very tough. Ducklings given this assistance are no weaker than the others; it is impossible to tell them after all are dry. Except when they are hatched by ducks, it is well to sprinkle the eggs with water at a temperature of a hundred twice previous to the date of hatching.

Bread soaked in milk is excellent for the first two or three meals. Then rolled oats or a little mash may be given. Five feedings a day are none too many for the first two weeks. Only a little mash should be given at a time; it should not be allowed to stand before the ducklings, and the

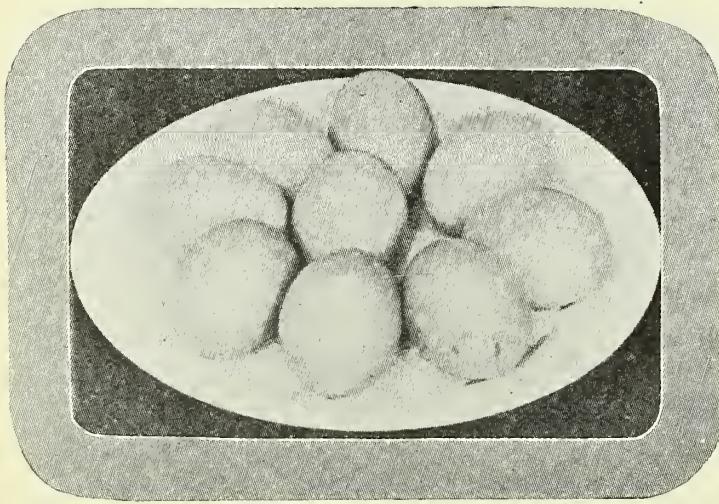
makes a very convenient food for young ducklings for it can be spread around on the grass, or even left in a feeding dish, if one finds it necessary to be away for a day. It will not sour, of course, and it is not eaten as ravenously as mash. When the ducklings are well grown, cracked corn may be given at night.

A neighbour has raised a flock of Indian Runner ducks the past season on dry mash alone, and his birds seem as well developed and as thrifty as mine. It is the same mash that he feeds his hens, and as the ducks do not know what a wet mash is like, they seem perfectly satisfied. It really is a very easy matter to raise Indian Runners, and they are more interesting than chickens. A fence a foot high will hold them when young, and a three-foot fence is ample when they are mature. When raising young stock with hens, I make little yards with boards at first and let the hens fly in and out as they please. The ducklings are not as dependent upon the hens as are chickens.

Young Indian Runners are extremely nervous, however, and are easily stampeded, piling up in a corner when frightened and suffering injury as a result. For that reason it is well not to keep them in large flocks and to move about quietly. When mature they are very tame and docile if accustomed to the presence of human beings. It becomes necessary to fairly push them out from under feet at feeding time.

The drakes make practically no noise, but the ducks have a loud and insistent quack. If they are not fed on time they comment on the fact in a way that cannot be mistaken. In cities and thickly populated towns their noise makes the keeping of Indian Runners inadvisable. There is certain to be trouble with the neighbours. Moreover, it is impossible to keep a small yard free from odours. In the open country, however, on farms and wide suburban lots, Indian Runner ducks may be kept with pleasure and profit. They are coming rapidly into favour, and are well adapted to northern conditions.

There are three varieties, distinguished by their color only. The fawn and white variety is the most widely distributed. The pencilled variety is the English type, and much stock has been imported. Birds of this variety are said to be pretty certain to lay white eggs. Finally there are the pure white Indian Runners, which are rather new, and probably produced from sports thrown by Fawn Runners. All are attractive to the eye, for they have a bright alert appearance, and a handsome carriage. They are not so large as the Pekins, and will never rival that breed for meat purposes. The meat, what there is of it, is tender and fine grained, but Indian Runners are primarily egg producers. They may well be called the Leghorns of the duck family.—[*The Canadian Countryman*.]



The eggs are considerably larger than hens' eggs, while the flavour is in no way inferior. This plateful weighed a full pound and a half.

youngsters should be obviously hungry at each feeding time. Beef scraps should be added to the mash by the end of a week, and it is well to mix in a little fine sand from the first. Rolled oats

ARE TURKEYS NECESSARILY DIFFICULT TO REAR?

By J. W. HURST

IT would almost seem to be a waste of time to point out the opportunities that exist in this country for a considerable increase in the production of turkeys. The facts have been repeated so frequently, yet so little has been done; suitable land remains unstocked, and the failure to satisfy demand continues. Several reasons for this apathetic attitude of so many farmers might be advanced, most of which, however, apply equally to the agriculturist's lack of interest in the production of eggs and table poultry. But in the case of turkeys the most probable explanation is the actual or assumed difficulty of rearing. A large number of those who essay the task undoubtedly experience difficulty in achieving any profitable measure of success, and the rest assume that turkeys are necessarily troublesome birds to raise.

It is, of course, equally true that a considerable number of people find it difficult to rear chickens and even ducklings. I know men who, as a part of the ordinary routine, make the round of the rearing fields with a trug basket specially carried as a receptacle for dead chickens. They expect to return with it full of corpses, and are seldom disappointed. This is because they attempt a production which they do not fully understand, and ignorantly engage in an occupation that requires a particular knowledge and experience. No one would suggest that there is to be no anticipation of loss in rearing operations. To do so would be foolish. The 100 per cent. rearing success is an ideal seldom attained, but it is a mistake to assume that a heavy death rate is unavoidable. If chickens and ducklings are not *necessarily* difficult to rear, neither in my experience are turkeys. It has been too readily believed that the turkey is inherently delicate. The chief grounds for this belief are ignorance and mismanagement.

The English agriculturist (and the turkey is essentially a farmer's fowl) who is induced, usually with difficulty, to take up turkey breeding for the first time, more often than not makes the initial mistake of managing his birds too much upon the lines adopted in his treatment of the ordinary domestic fowl. It goes without saying that he looks for trouble on account of the aforementioned presupposed necessary delicateness in the progeny. Should he be fortunate enough to secure healthy stock at the commencement, and should he begin operations in a season of favourable climatic conditions, and should there be a resultant

measure of success in rearing the young birds to maturity, he is inclined to look upon his good fortune rather as phenomenal "luck" than reasonably anticipatory. Judging by the methods most commonly employed in turkey rearing, I am not sure that he is not right. But if it is first of all understood that turkeys are not so amenable to the same domesticated methods of treatment to which common domestic fowls have been more or less inured, it will be found that they are capable of at least an equal hardiness when reared with a due regard to their particular requirements.

The habits of the turkey and the economy of its production render access to a wide and suitable range very essential. Although under certain conditions turkeys may be bred and reared within an enclosure of comparatively small area, a much smaller percentage will attain the best development as regards shape, size, and even colour of plumage, than in more suitable circumstances. Writing of the hardiness of the North American wild turkey, in the *Field*, of 3rd March, 1912, Mr. D. Seth-Smith gives an account of the successful rearing of the young birds on the tainted ground of the Zoological Gardens. "Turkey breeders," he says, "tell us that young turkeys are by no means easy to rear on a damp soil, or in close confinement, but we succeeded in 1910 in rearing nearly a score of cross-breds, of which the male parent was *M. americana*, and the female a domestic turkey, in one of the small, damp paddocks on the north side of the ostrich house, which, I am assured, would have been next to impossible with pure-bred tame birds. In 1911, on the same ground, we reared fourteen chicks of the pure wild bird out of a total of fifteen hatched." This a particularly interesting experience, furnishing, as it does, proof of the natural hardiness of the wild turkey, with which may be contrasted the degeneration consequent upon mismanagement under conditions of domestication.

Not only has the domestic turkey been subjected very commonly to more or less unfavourable conditions, but it is well-known that indiscriminate in-breeding has in many cases been largely responsible for its degeneration. On the other hand, the haphazard introduction of fresh blood into a flock has sometimes been the cause of equally bad results. It is not difficult to recall instances in which the value of a stock has depreciated by the mistaken mating with a cock, which, apparently healthy, and otherwise suitable, has been

possessed of an inherited weakness produced by defective breeding. The infusion of genuine wild blood has, however, where it has been possible to procure it, proved of great value in reinvigorating flocks that have deteriorated by long subjection to ordinary methods of domestication. In some parts of the United States half wild stock is, I understand, procurable, and it should be worth some trouble to secure such birds for crossing with the domestic bronze in order to improve the stamina.

It is not, however, by any means generally possible to bring about the desired improvement by the introduction of such a strengthening factor, but much may be done towards the recovery and maintenance of natural hardiness by the adoption of better methods of management. Although we have not the opportunities that exist on some of the back-lying American farms there is a too common failure to realize the advantages we have. It would, of course, be altogether impracticable under the conditions of English farming to treat turkeys as they are treated where there is vastly more space, and where settlements have not unduly encroached. But there is ample opportunity for a free and much more natural treatment than that which is so often associated with farm methods of rearing, and the use of inadequate coops and quite unsuitable sleeping quarters. Turkey rearing is never advisable where the surroundings are at all cramped or confined, but the pity of it is that those who possess or occupy the most suitable situations, as regards area and character of range, are usually the last to realize their opportunities.

It would not be reasonable to suggest that

because the hen turkey is a better mother to turkey poult than the barndoors hens, the latter should not in any circumstances or for any purposes be employed as a foster mother for these birds. But the difference between turkey-reared and fostered poult is sufficient to suggest the advisability of allowing the natural mother to rear the young birds intended for future breeding stock. The superiority of the hen turkey for poult rearing consists in the adaptability of her methods to their peculiar requirements. For example, she modifies her wanderings to suit their age and needs, and by gradually increasing her journeys accustoms the young birds to habits of activity and foraging. They thus get continual exercise and are taught to find their food in small and frequent quantities, a combination that is conducive to the attainment of full growth and development and the maintenance of health and vigour. The hen turkey has, moreover, an instructive discrimination as regards exposure to the weather, and the poult she rears naturally are not so susceptible to adverse conditions as are those reared by the cooped domestic hen. Another important characteristic of the hen is her disposition to continue her mothering functions for a much longer period than the ordinary domestic hen—and the rearing of poult is a relatively long business. If stock birds are reared in this way, by the hen turkey, it will go far to improve the stamina of flocks, provided the breeding pen is carefully selected and mated, and that the birds are housed and fed properly. It should, moreover, be remembered that losses in rearing are very commonly caused by over feeding and the attacks of parasites, and are consequently preventable.

A SMALLHOLDER'S FIRST YEAR.

CHAPTER IV.

SIDE LINES TO POULTRY-KEEPING.

ERHAPS this is not altogether a happy title to select, since in this issue we do not propose to discuss at any length the other operations that are necessary, or which are suitable, for running in conjunction with poultry. Our object is to deal with a few of the many branches which can, under certain circumstances, be followed with success.

Under the heading of "side lines" we would place such industries as duck, goose and turkey rearing, the fattening of poultry as a specialised branch, the sale of eggs for hatching, and day-old chickens; the growing of bush fruit, etc., we

propose to discuss fully in the September issue, as this is of such importance that complete details are essential.

As we have already pointed out, the poultry on a small-holding should be kept primarily for egg production, but this need not prohibit the holder from taking the opportunity of working "side lines" if such presents itself. We do not for one moment advocate that waterfowl and turkeys should always find a place under such conditions, but there are occasions when these birds can be kept profitably.

To deal with these birds in order as given above. The only object in duck raising on a small area of ground should be to supply the market with ducklings in the spring of the year. The eggs should be purchased—and for this work there is no better

breed than the Aylesbury—for on no account should stock ducks be kept unless there is sufficient space to give them their liberty, including access to water.

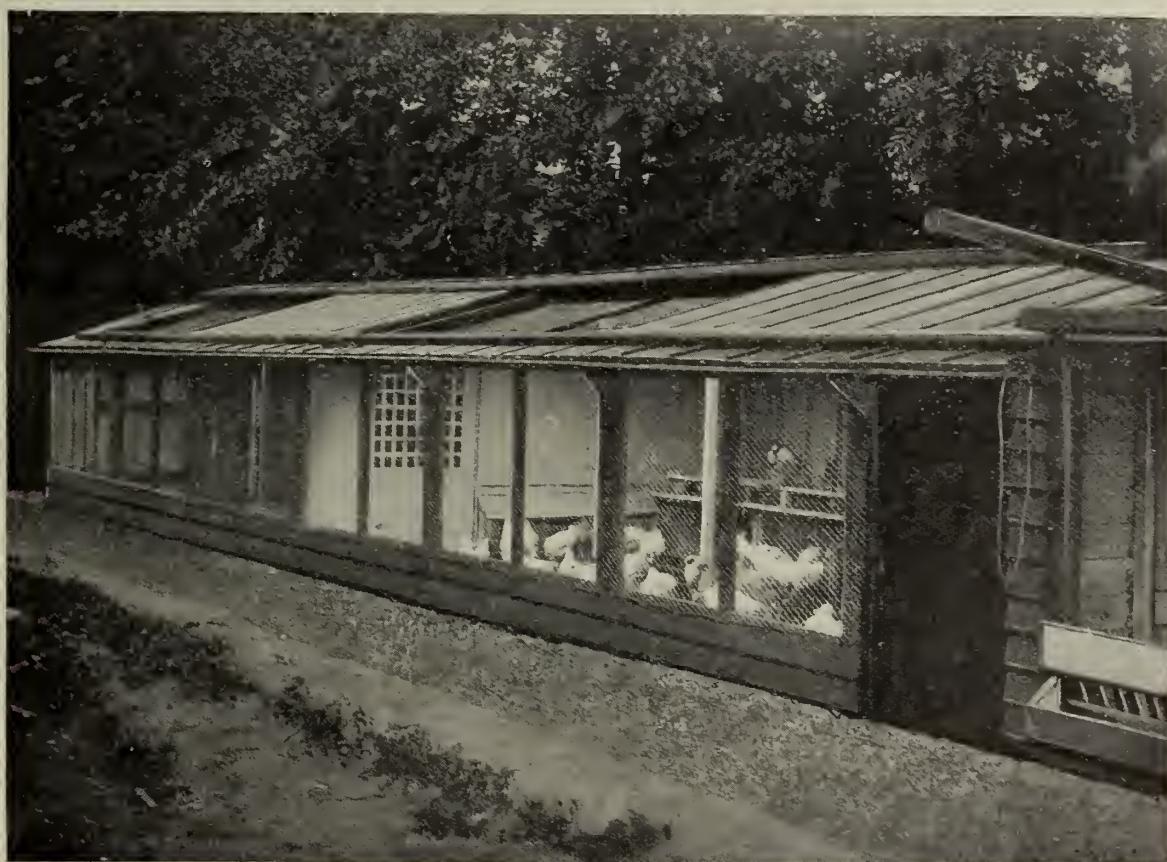
From the time the ducklings are hatched until they are killed, they are kept in strict confinement, in houses with small yards attached, hence the smallness of the holding need not be considered. If duck eggs, of the breed indicated, can be obtained from October or November to March, at a price varying from 3/6 to 2/- the dozen, and the necessary houses and runs can be erected, this is a suitable industry to follow.

The eggs can be incubated either by the natural or the artificial method, and as they require practically no brooding after the first week, no expensive

appliances are wanted. Even if an incubator is used for hatching, it is usually possible to secure hens for rearing purposes. After the ducklings are some ten days old they should be kept in batches of twenty-five in small houses with runs about six feet square. As the birds increase in size the yards should be made larger to correspond.

The birds are killed when eight or nine weeks old, that is before they assume their adult plumage. It is unnecessary for us to enter into details as regards feeding, etc., as this point, and others, have been fully described in the *ILLUSTRATED POULTRY RECORD* in the past.

The only occasion on which geese should be kept is when there is waste or common land available in the neighbourhood of the holding. If the



The last designed form of intensive poultry house with roof ventilation.

On Mr. F. Palmer-Phillip's Farm at West Norwood.

birds have to be kept on the holding itself, all idea of working with this class of stock should be discarded. The one exception to this which we can name is if it happens that roots are being grown, and the season is a poor one, then it sometimes pays to buy a few lean geese and let them feed off the roots, by penning them on the land, in the same way as is done with sheep.

With reference to turkeys, we would suggest that only the final process should be attempted, that is, preparing them for market. In this case the season of demand is different from that for ducklings, since Christmas is the principal festival when these birds are required. If well-grown birds are purchased in the early part of November, kept in

confinement and fed properly, a good profit can be made by fattening them.

Turkeys require too much space to make it advisable for a small holder to keep the necessary breeding stock.

During the hatching season there is frequently a local demand for eggs for hatching and day-old chickens. To make arrangements for satisfying this demand may bring added profit, especially as the value of eggs for consumption decreases rapidly during February, March, and April. If the parent stock are good utility birds it pays better to sell the eggs for hatching, or incubate them on the place and sell as chickens, than for market purposes in the usual way.

We do not suggest this branch as the principal one, but as a "side-line" it certainly has its uses. It is not difficult to add a few pounds a year on to the receipts by such a means as this.

The last suggestion we would make is the rearing and preparation of spring chickens. In any case the surplus males and the mismarked females will have to be disposed of, and if there is sufficient space available for rearing purposes, it is a paying business to raise a number of birds specially for marketing.

The majority of the heavier breeds are suitable—that is the winter layers—and as the chickens can be marketed at fifteen to sixteen weeks old, they are soon turned into money.

For such birds, weighing about four pounds each the following prices can usually be obtained: April and May, 3/6 each, June 3/3, and July 3/-. After the end of July the prices begin to fall rapidly, hence it is not advisable to cater for such a market during the month of August and onwards. It should not cost more than 2/- to rear birds to this age, therefore the profit to be made is not to be despised.

With reference to this last branch, and also that of duck-rearing, it should be remembered that a spasmodic supply will never realise the same figure as when a definite number of birds are ready for market each week.

With all branches of the poultry industry, it is necessary to think well in advance and to arrange accordingly, and this is particularly true of the "side lines" to which we have referred above.

More Hatching en route.

Mr. I. Gundie on March 4th dispatched another lot of eggs to be incubated on the voyage to South Africa by the s.s. "Inanda," and also three egg cabinets for hatching after arriving in Natal.



A Pen of Porcelaines d'Uccle Cockerels. [Copyright]

CARE OF CHICKENS IN APRIL.

By F. W. PARTON, (*The Leeds University.*)

If chickens are to develop into satisfactory and profitable stock they require the greatest care and attention from the very outset, but at no period in their growth is it so essential as during the present month. It may with truth be said that the month of April is one of the most arduous of the whole twelve for the poultry-keeper, and he must be prepared to work early and late, while the work in every detail must be conscientiously carried out, or the ultimate profits will be minimised. Hatching is now in full swing; chickens are very numerous, and every day throughout the present month they are becoming more plentiful. There are chickens ranging in age from ten or twelve weeks to those having just been hatched, all needing attention. Many poultry-keepers hatch their non-sitting breeds in May and right on till the second week in June, so that chickens will yet be considerably more numerous than in April, but by the month of May many of the early-hatched chickens will have reached an age when they do not require the same amount of attention, and can, to a large extent, look after themselves. More than this, the weather will be more reliable. We can, therefore, take it for granted that the present month is not only the most important, but also the hardest in the poultry-keeper's year. If the weather during the present April keeps up its reputation for rapid changes, we must not be surprised to have, in quick succession, wind, hail, rain, and sunshine.

To minimise the evils of this inclemency, the first and foremost consideration for the chicken raiser is to provide adequate shelter, since before the time arrives when we may expect fine days and warm nights, the chickens have many hardships to face. None of these hardships are, however, of such a character but that they may be entirely guarded against by a little care and ingenuity. Protection is the key-note of success, and shelter should always be provided whatever the weather may be. It is very frequently argued that chickens are better and stronger when they are compelled to rough it at all seasons, and that this lays the foundation for a robust constitution. It is quite right that chickens should be allowed to rough it to a certain extent, but provision must be made for their protection during inclement weather.

The ample provision of shelter does not necessarily mean pampering the chickens. It is perfectly true that overheated sleeping-quarters and constant confinement under cover causes even the strongest chickens to fall victims to any disease that may be about, while those less tenderly reared escape. What we strongly advocate is that when natural protection is not available, roomy shelters should be provided, which should be so arranged that the chickens are not fastened therein, but can run out in the open, at the same time being able to return for protection and warmth. It is also a wise measure to use plenty of dry and sweet litter, and

among this should be thrown small seeds such as groats, canary-seed, red millet, dari, and buckwheat. Thus the chickens that are under cover have ample means of exercising. When temporary shelters are provided, they should be closed to the north and east, with the side facing south left open so that the chickens may enter or leave at will. The general style of coop employed is usually somewhat small and cramped for the comfort of the hen and chickens, the smallness of the coop in many cases being responsible for the chickens being trampled to death. On most establishments all the attention is given during the hatching season to the chickens,

Their growth and everything points to the advantages, whether natural or artificial methods are adopted, of scattering the chickens about as much as conditions will allow. One reason why this plan is not more generally adopted, is that chickens run more risk from marauders when placed at a great distance from the farmstead. There is certainly some danger in this direction, but there are ways and means of protecting chickens under such conditions. At any rate, it is worth a trial, since the benefit to the chickens of plenty of change is manifold. It is even worse where chickens are reared in the midst of adult stock. This is a



A Flock of December Hatched White Wyandottes.

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and the broodies have to put up with very uncomfortable quarters, and often have to be satisfied with some small seeds, excellent for young ones, but far from sustaining to the hen. Care of the hen indirectly means care of the chickens—a warmly-sheltered, well-fed hen undoubtedly makes the most contented and attentive mother.

For the hen's comfort and for the chickens' safety, the coop should be sufficiently large to allow the hen freedom of action. If the soil is dry no wooden floor is necessary, provided, of course, that the coop be regularly and methodically moved. If, however, the soil is very heavy and damp, or if the space is not sufficiently large to allow of regular moving of the coop, then a wooden floor is a necessity.

Change of environment is a very important factor in the successful rearing of chickens. The benefit to the chickens is apparent in many directions.

mistake on a few farms, but it is gratifying to be able to say that such cases are few and far between, as the most indifferent farmer sees the error of such management, and, so far as he is able, devotes certain plots of land exclusively to the rearing of his chickens.

Mr. & Mrs. Pyne—their annual catalogue.

The reason for the success of the Ravenscar poultry is a trade secret. The public, however, have the advantage of their specialised information in the steady improvement of their "recording-nest" strains. For twenty-two years this system has been adopted on the farm, hence the splendid performances credited to this stock. The fact that the farm lies 750ft. above the level of the sea—"between the heather and the Northern Sea"—accounts to a great extent for the sturdiness of the Ravenscar strains. A request for a catalogue—mentioning the I.P.R.—will meet with a ready response.

THE SPRING CHICKEN.

THERE are more sorts of spring chicken than one. There are three sorts. One kind we may observe in poulterers' shops as we walk about the streets—that is the kind most commonly meant. There is the spring chicken of the earliest poultry shows now shortly to be in season—and that has probably been more talked about than any other class or description of fowl. And the third kind of spring chicken is the common or garden "thing" of the countryside—something which we may knock down or destroy in our motor car without much compunction, for it seems to be so ubiquitous, and therefore so insignificant.

It is of that last-named sort I wish more particularly to write, for it is certainly the most important of the three and the least understood. A man who tries to rear the spring table-bird must take pains or his produce will not sell; the fancier cannot hope to win prizes unless he brings on his youngsters as rapidly as possible under first-rate conditions. But the ordinary farm chicken hatched in the spring—what matters it? Our national shortage of eggs and the failure of poultry-keeping on many a fine farm are largely due to inadequate encouragement and attention on the part of farmers.

"They seem to grow, anyway," you say. Yes, they do, and that is because they are reared upon the principle of the "survival of the fittest." But think for a moment what a sum of energy is required to win through eight months of squabbling and striving in the farmyard, chased and chivvied by elders and betters. In the upshot we get something strong and hardy, admittedly, but naturally reduced both in mere bulk and in capacity for reproduction. The life of the farmyard, precarious as it often is, proves almost as great a stumbling-block to prolificacy as the indiscriminate character of breeding and of breed.

Probably the capacity required to struggle through is wholly under-estimated. It is, in fact, a source of strength inherited from environment, not less than from an ancestry which has suffered likewise. I have before me my own experiences in regard to fertility and free range on a farm. Last season my breeding-stock had free range over meadows and into yards—admittedly they were well fed and well tended—and the degree of fertility was a hundred per cent. Now, with a more refined stock more scientifically managed, but confined in breeding-pens twenty-five yards by twenty, I do not think I ever achieved a higher fertility than eighty per cent. Upon the farm there was not an unfertile egg throughout the entire season—all were dark and strong and lively.

What the average farmer does not understand is that by better methods—if not by better stock—the same result of pre-eminent utility can be attained in combination with far more profitable qualities. Let us look at some of his mistakes in rearing—for

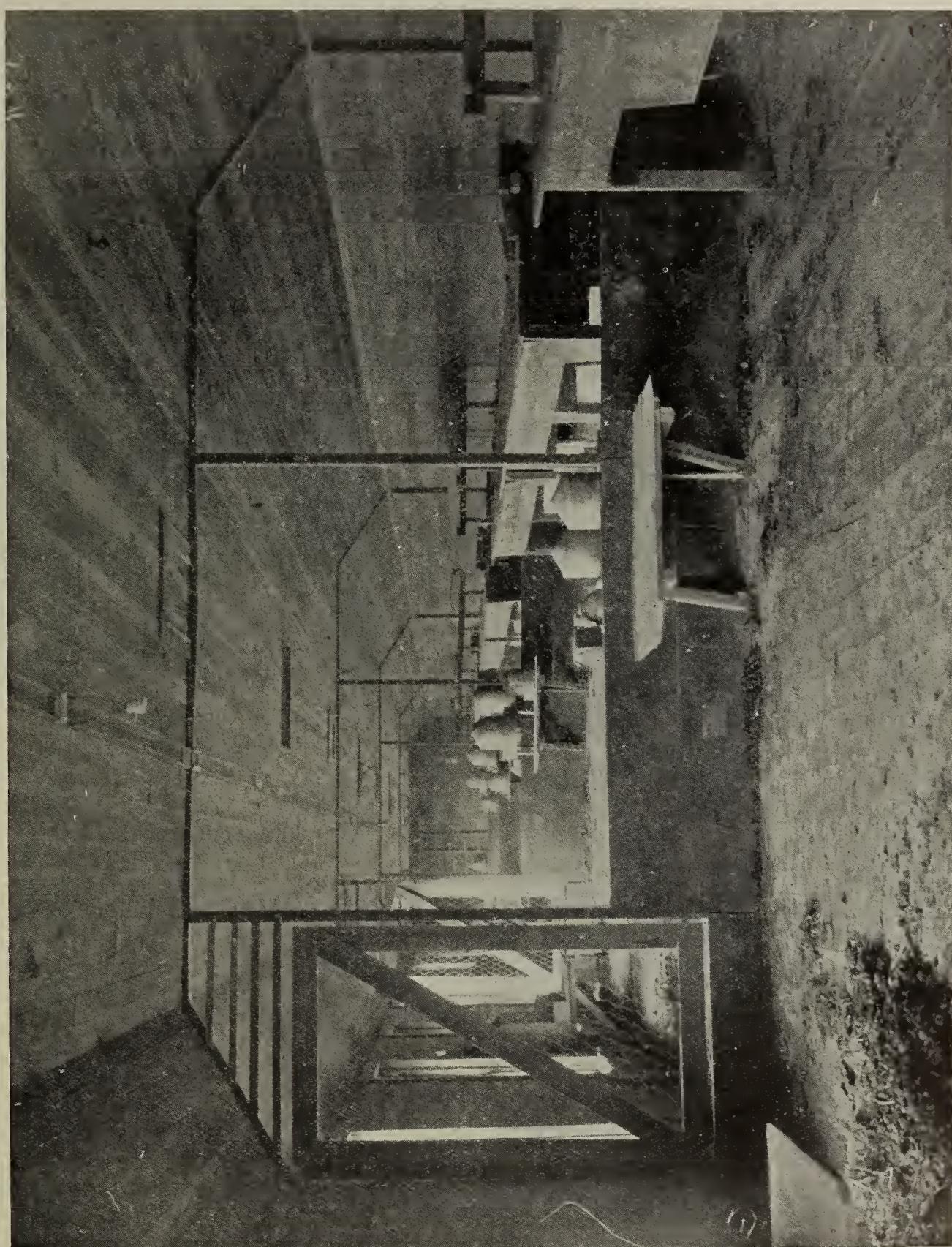
is not rearing the basis of good poultry-keeping? The coops are seldom sound and up-to-date. A good start is the most important point in all rearing; thus, if there are draughts and damp, one cannot expect a sound foundation for quick growth. What is wanted on a farm is a broad, rather low type of coop, very stoutly put together, roof coming well over front and back, half the front only slatted, the rest protected; a well-fitted moveable floor, with two 2in. by 1in. battens projecting at least a foot fore and aft, by which means they can be easily borne about.

This month many farmers will be getting their birds out of the coops—into what? Into some hideous farmyard den full of filth, and vermin, and vicious cocks and hens. He will, in fact, be relegating them severally to the common purposeless lot. Now, when chicken are six or seven weeks old and fresh from the hen, you cannot afford to expose them to the vagaries of an English spring. They should be placed in a sound, warm house, duplicating, as far as possible, the conditions to which they have grown accustomed. I do not like a colony-house so much for this purpose as a low, well-built shed opening by a lid in the roof, having a netting-covered aperture high up in front, and a thick floor. The colony-house on wheels, though ideal for laying and breeding stock, has been responsible for many deaths among young chickens, since at night they will often creep underneath between the wheels instead of climbing the ladder; but with the other place they have only to walk in at the trap-door, crowd together at the further end, and be thoroughly warm.

After all, though, the great stumbling-block is the separating of the spring chicken from the hardened fowl—that essential measure which scarcely one farmer in ten appreciates. The coops should be located, if possible, in the orchard, but not if their occupants will be interfered with by raiders from the farmyard. Many a good rearing site is spoilt this way. A young fir or larch plantation will do nicely, if the grass be kept fairly short. The southern side of a good bank and quickset hedge may do if no other suitable position can be found.

The sorting of the stock—so necessary at three months—always provides new problems on the farm. You see, it means a division and sub-division of flocks, and that is no easy matter where wire netting is non-existent. Particular methods must be suited to particular conditions. But it can be laid down that the chickens must be kept away from the farmyard until they are eight months old.

I have dealt at some length with these questions of housing and situation because they are primary conditions. Greater stress might be laid upon feeding, but I am not of opinion that this is at all the worst side of the business for the first six weeks. The torture of a peppercorn is not inflicted on the unfortunate chick as it used to be in days gone by. The common diet is the old-fashioned egg and



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Interior View of a large American Laying House.

bread-crums, minced meat, rice and milk, and, believe me, there is none better for the first ten days. After that something altogether more substantial is required—very fine biscuit-meal scalded and left to soak all night, then mixed and kneaded between the palms of the hands to a light paste. One might give this twice a day and a good dry food four times for the first six weeks, taking off one meal after the first month. It is after that month, and especially when the chicks have left the hen, that trouble comes. Henceforward, as a rule, they have to find a great part of their own living—not such a difficult task if the birds are properly placed, but this is seldom the case. House them in the lee of some corn-stacks and they will pick up much good fare, especially at threshing time. Soft food, however, is what they want. Give them, therefore, twice a day scalded biscuit-meal mixed with ground oats and sharps. During April and May they will also want two feeds of corn—nice round clipped oats or strongly sifted chicken wheat. Gradually reduce this until the time when the hay is off and the birds can be moved into the meadows. After that all is more or less plain sailing.

One matter of urgent importance which is almost invariably neglected is the separation of the sexes. We see cocks and cockerels, hens and pullets mingling unnaturally together, and that, of course, is a factor diametrically opposed to proper development. The spring chicken—especially of the lighter breeds—peculiarly inclines toward a precocity which the utterly ignorant mistake for rapid growth. The cockerel which crows and besorts a comb at three months is no less than a wastrel, and so as a rule is the pullet which lays at four months. To my mind the value of the former is practically nil, while the latter will produce half a dozen very small eggs and moult.

Then there is water. The farmer, with all his care for stock and his knowledge of its requirements, leaves his poultry to forage for one of the first necessities of life and find it if they can. Mention of that brings mention of gapes. Once found on a rearing-ground, they are almost impossible to speedily eradicate. The sure preventive, however, is fresh land, and, above all, fresh water, which should be kept always before the birds in clean shallow troughs. Given this, its freedom, and good fare, and the spring chicken will not only pay, but offer interest at a high rate.

THE TABLE POULTRY CLUB YEAR BOOK.

Since the establishment of this club there has been nothing but one long uphill climb, but notwithstanding this something has been accomplished. Much yet, however, remains to be done. The membership now comprises 151, and this in view of the adverse criticism to which the club has been subjected during the past year is very creditable. The foundation, however, that has now been laid, will, if the united efforts of the members are concentrated on the one object in view, be

sufficient on which to erect a substantial superstructure. Poultry-keepers generally must admit that the work already accomplished by this club has been considerable. The standard for judging table poultry, prepared after careful thought, is a step in the right direction.

The year book is an excellent publication, containing a great deal of valuable information, and it deserves a wide circulation. The Hon. Secretary of the Table Poultry Club is Mr. E. Widdows, Dinton, Nr. Aylesbury, Bucks.

POULTRY IN VARIOUS COUNTRIES.

Part V. of the Agricultural Statistics for 1912 gives a mass of information respecting the Colonies and foreign countries, in addition to our own, although the references to Poultry are few and far between. Such as these are we give them.

COLONIAL.

Country.	Year.	Total No. of Poultry.
Western Australia	1911-12	862,394
Canada, Nova Scotia	1911	951,983
„ Ontario	1912	660,843
	Turkeys	362,674
	Geese	12,001,466
„ Quebec	1911	5,152,728
„ Saskatchewan	1912	4,759,954
„ British Columbia	1911	1,011,473
South Africa, Transvaal	1911	2,719,016

FOREIGN.

Argentina	1908	16,721,180
Austria	1910	35,981,129
Bulgaria	1905	6,408,252
Denmark	1909	12,772,763
Germany	1912	82,702,030
Luxemburg	1907	373,765
Finland	1907	603,593
Sweden	1911	3,961,141

For comparisons we add the figures for the United Kingdom.

England	1908	29,392,000
Wales	1908	2,840,000
Scotland	1908	4,496,000
Ireland	1913	25,701,342
		62,429,342

AVERAGE PRICES OF EGGS AND POULTRY.

Australia, New

South Wales	1910	Eggs ... 1/0 ¹ ₂ per doz. Fowls ... 4/10 per pair Ducks ... 3/1 ¹ ₂ „ Geese ... 6/2 „ Turkeys 12/8 „
New Zealand	1912	Eggs 9d. to 1/3 per doz.
Denmark	1912	„ ... 1/2 ¹ ₁ „
Japan	1911	„ ... 5/1 per 100.
Switzerland	1909	„ ... 1/0 ¹ ₄ per doz.
United States	1911-12	„ ... 11d. „

REARING IN THE NATURAL WAY.

TO a large extent the early treatment and management of chickens determines their future value. Neglect at the outset will have well-nigh fatal results so far as ultimate profit is concerned.

The first important point for consideration is: What is the most suitable place upon which to rear chickens? The points that ought to govern the choice of the situation for the work are what amount of natural shelter in the form of shrubs, bushes, etc., is available, and if these are not available, does the position lend itself readily to the erection of temporary shelter? The quality of the soil is also important, and while the poultry-keeper cannot alter its quality, he can do much to overcome difficulties which at first sight appear to be insurmountable. It is an absolute necessity that the immediate plot upon which the chickens live shall be dry, not necessarily sandy, nor very light, but it must be dry. The result of rearing on a damp, marshy place is that the growth of the chickens is very considerably retarded. Not only so, but the damp and cold arising therefrom have the effect of inciting attacks of diarrhoea, while, in addition to this very serious ailment of chickenhood, they very often go wrong in the legs. It is no uncommon sight to see chickens that run on a damp soil with their toes caked with mud. This accumulates and hardens to the solidity of a stone, and it is not infrequently the cause of permanent lameness, which is not only detrimental from the utility standpoint, but very objectionable from a point of beauty. A few deformed chickens quite spoil the appearance of an entire batch, since these faulty specimens seem in an unaccountable manner to be more prominent than any of their more perfect brethren. It is, however, true that chickens may be affected in this way upon any kind of soil, but it is more liable to happen on a damp than on a dry place, since under the latter conditions it is caused by inattention to cleanliness.

It is difficult, if not impossible, to get a place that is perfect in every detail; at the same time, by exercising a little ingenuity and method a most unlikely place may be transformed into quite a suitable one. If the ground is not naturally dry, some kind of drainage should be adopted. Of course, whatever be the ingenuity of the owner, no amount of skill can ever convert a really bad place into a good one, but much may be done to improve it. In addition to surface drainage, the highest part of the land should be chosen, so that the water runs away from the spot where the chickens mostly gather. It is a very great advantage, when the rearing ground is so situated, for the chickens to have freedom and access to ground that can be dug up from time to time. This gives a wonderful fillip to the growth, since they are kept busily employed in scratching, and they get from the freshly-spaded earth much valuable feeding matter. In selecting the position the importance of adequate

shelter must not be neglected. This is an extremely important matter, and it is seldom recognised that shelter is just as necessary for the feathered members of a farmer's stock as it is for any other live stock. It is not meant to imply that they require to be reared entirely under cover. We are by no means in favour of this system, which has the effect of making them extremely tender, and when the time arrives, which arrive it must, for their removal, they are not equipped with the necessary strength to withstand severe weather, which they are sure to have before they are safely "through the wood."



Rearing in the Natural Way. [Copyright.]

There are other extremists who say that they like to follow nature and bring them up in a harder manner. Very frequently this cry of following nature is merely an excuse for neglect, both so far as chickens and adult stock are concerned. It is all very well to say when the young ones have no shelter and the old ones roost in the trees that this more nearly resembles the conditions prevailing when in their wild state. It would be quite as reasonable not to feed the birds, since in their natural state they were accustomed to find their own food. There is a medium in all things. Allow the chickens liberty to run out in the open at any time, but have plenty of shelter and a place where

warmth may be had. They will soon find out the warm spot and run to it when they require brooding. Chickens will never thrive to the same extent unless they are kept warm, for we find the growth of all stock is very considerably retarded unless they are kept warm. When the chickens mope about with shoulders up and feathers ruffled, it may be taken as a certain sign that they require more heat.

The piece of land that is to be used for the chickens should be in readiness well in advance, and it should be dry and well sheltered. The coops should be so placed that all the benefit of the shelter, whether natural or artificial, is secured. The coop should be sufficiently roomy to allow the hen freedom of movement. An adjustable shutter in front is a distinct improvement, since it affords protection during the night and shade from the sun in summer. One very often sees coops facing in any direction except the south, and, being provided with no sort of shutter, the wind and rain beat directly upon the inmates. In the very early months of hatching it is an excellent plan to place the coops under a wooden shed, where the floor is strewn with dry earth to the depth of two or three inches. On the top of this some sort of litter, such as chopped straw, chaff, or anything of a similar nature, should be strewn, among which the chickens can find plenty of employment. If the place at the poultry-keeper's disposal is sufficiently large to allow of the daily moving of the coops, and the earth is dry, it is inadvisable to have a wooden floor. If, however, the soil is heavy and cold, a wooden floor should, by all means, be provided; but it should not be part of the structure, but merely a board a few inches bigger than the bottom of the coop. When the coop is placed thereon, both hen and chickens are protected from the damp earth. This, of course, is important, but even more important still is that it greatly simplifies the thorough cleaning of the coop. All that is necessary is the daily removal of the coop from the floor, when the latter may be scraped or treated in any way necessary to secure perfect cleanliness. Many are the ailments incidental to chickenhood that owe their beginning to inattention to these matters. It is perfectly true that the hatching season is an extremely busy time for the poultry-keeper, and with his many and varied duties he may overlook the supreme importance of this matter, the results of which are apparent in many directions. Dirt is bad for fowls in every stage of their life, but never is it so serious a menace to their well-being as it is during their young days. It considerably checks their growth and undermines their constitution, thus rendering them ready victims to disease, which otherwise they might escape. Dirt and insanitary conditions are responsible, in many cases, for the presence of both internal and external parasites. When young stock are doing badly worms are very often unsuspected, and some other cause is given for the wretched condition, but it is due to worms that they are thriving so unsatisfactorily.

Much of this trouble may be obviated if care be taken to keep the ground, coops, and all other appliances scrupulously clean. In close proximity to the coop some fine ashes or dust should be placed, so that both hen and chickens may enjoy a dust bath, one of the surest ways of keeping down parasitic life.

The frequent moving of the chickens has a two-fold benefit, one of which we have already mentioned—namely, cleanliness and the keeping of the land sweet. The other reason is equally important, and that is, the benefit derived by the birds through having a continual change of surroundings. There is no greater aid to growth and condition than that secured by change of environment. This is seen in so many directions. After a rather lengthy stay on one place the chickens may be observed to have lost much of their former energy, and for the next two or three weeks their growth is not so pronounced. The reason for this lethargy and check in growth simply means that the birds want a change. This does not mean that the land is tainted, or any such deadly reason necessitating the change, but merely that the tedium and the familiarity of their surroundings have cramped their energy. A change of position very soon restores their vigour, which is so closely allied to growth and condition.

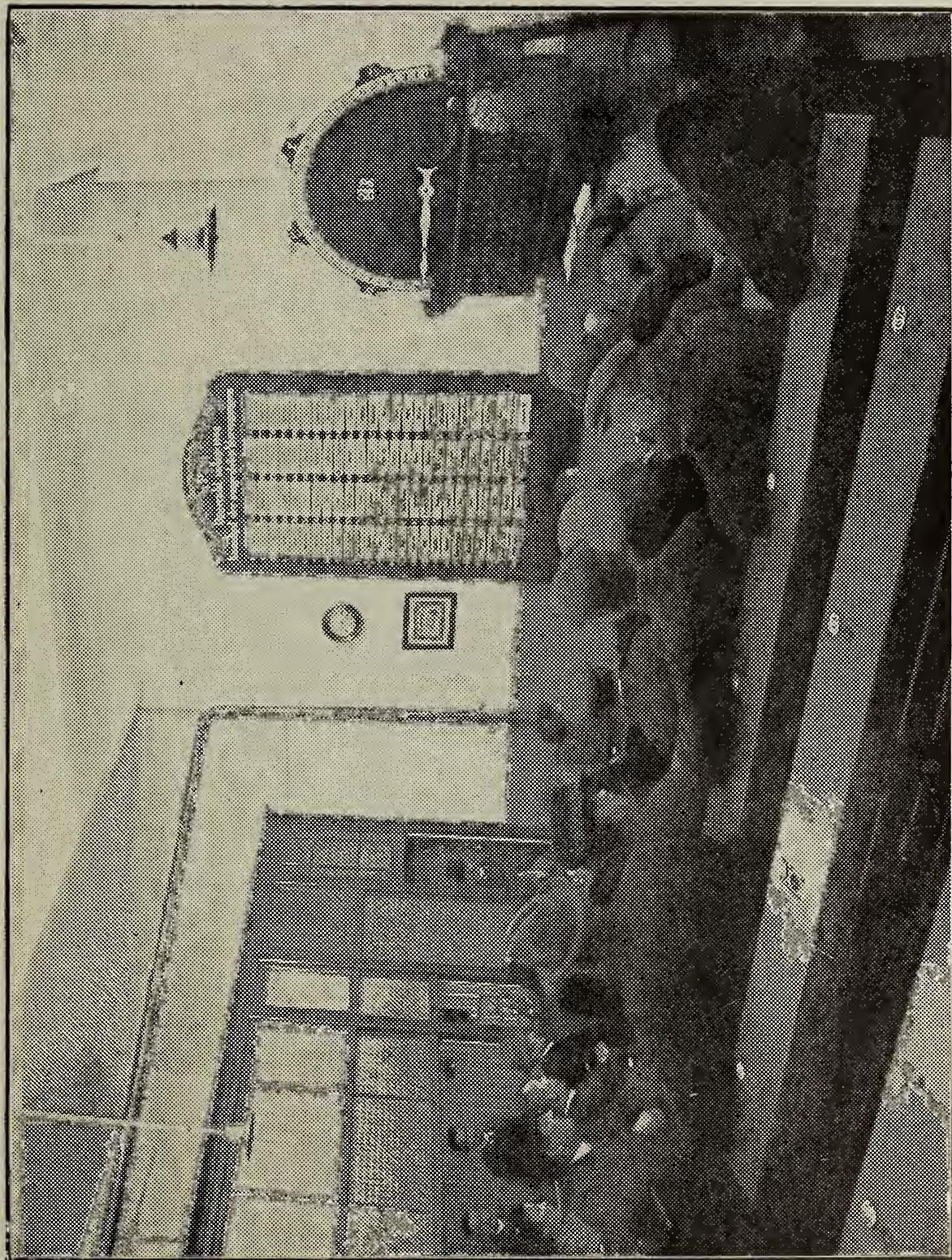
Prices in South Australia.

Mr. D. F. Laurie records that prices for eggs in this colony were slightly lower and for table poultry higher in 1913 than in previous years.

Cold Storage Eggs.

In a lecture given at the Incorporated Society of Medical Officers of Health, Dr. Hanna, of Liverpool, said:

"The cold storage of eggs in transport or in store was now an important industry. The eggs were packed in thin modern boxes with an individual cell made of cardboard for each egg. The question of temperature was important for this product. A moderate temperature, e.g., 4 deg. C., was employed. But it was necessary that this temperature should be used for periods of not more than four months, as yolk rose and stuck to the shell, causing premature decay or "spotting" of the egg. The boxes must therefore be turned every week to prevent the light yolk rising and adhering to the shell. If the temperature was lower yolk and albumen were more solid. Fresh eggs froze at 6 deg. C. The humidity of the chamber in which they were stored was very important and should be about 75 to 80 per cent. Too high a humidity favoured the growth and entrance of moulds into the eggs, and too low a humidity facilitated the evaporation of the contents. Once mould attacked eggs it meant that they became musty, unpalatable, and involved a very considerable commercial loss. When eggs were carried in bulk, i.e., without the shells and mixed, and were brought from far-off lands such as China, it was necessary to test the cans individually by means of a trier. This instrument was passed in and some of the frozen egg substance was withdrawn and tested for mustiness by the sense of smell. This operation meant such mental concentration that any noise such as that arising from the use of a hammer or the rumbling of carts in the neighbourhood seriously interfered in the operation."



[Copyright.

Automatic Auction Sale in Holland.
Here there is no noise or calling. The apparatus shown on the dial of apparatus at the back of room records the prices suggested, starting at a high figure. As soon as a buyer wishes to bid he touches the button on desk in front of him, the dial hand stops, the indicator below gives number of bidder, and the sale is made.

SOME CHICKEN NOTES.

FOR the breeder who intends hatching in large quantities there is little doubt that the artificial method of rearing is the better, as broody hens are very scarce in the winter time. For those who wish to hatch a small number later on in the season hens are preferable. The feeding and general management in both cases is practically the same. Many old hands declare that anyone can hatch chickens, but it is a wise poultryman who rears them, and this is a true saying which has been borne out by many poultry-keepers.

About the eighteenth day—that is, three days before the hen is due to hatch—she should be dusted lightly with insect powder, as nothing retards the growth of the youngsters more than the lice which they are liable to get from off the body of the hen. The hen should be fed before being put out in the coop with her brood, otherwise when the chicks have their first feed she will in all probability devour it. If the weather is damp or cold a floor should be fitted to the bottom of the coop and well covered with very fine peat moss litter. It is wisest to cover up the front every evening, as this will not only protect the chickens from cold winds and rain, but act as a safeguard against prowling vermin. Place the coop in a sunny position in winter and in a nice shady spot in summer. The old hen should always have free access to the drinking fountain, which should be just in front of the coop; in the summer time the fountain should be refilled once or twice a day, as sun-warmed water is most injurious. Move the coop daily, since nothing benefits the youngsters more than fresh grass. When they are about eight weeks old the hen is unable to brood them properly, and this in the winter time is the age when they should be removed to a small cold brooder.

For the first twenty-four hours of their lives it is quite unnecessary to give chickens any food at all, as preparatory to hatching they absorb the yolk of the egg, which sustains them for one or even two days of their existence. With their first feed should be mixed a little fine grit. There are two methods of feeding—namely, the dry and the wet—and both ways have strong advocates in many of our leading poultrymen. My own experience is that the best way is the happy medium or combination of dry and wet food. A few years ago for the first few feeds practically nothing else was used but hard-boiled eggs and bread crumbs, and there are still to-day a great many who prefer this method, although I am sure that if a referendum were taken on this question we should find that the majority were in favour of the dry food. Whilst on the subject of dry feed I should like to strongly impress upon all novices the great importance of purchasing their food from a reliable firm who understand the blending of the different seeds and know what should be put in and what should be left out; cheapness in nine cases out of ten is the dearest in the long run. Chickens when first hatched require

feeding about every two hours for the first fortnight; at six weeks old five times a day is sufficient, twelve weeks four, and gradually diminishing to three.

At three weeks or a month old a little soft food may be given, and there are many excellent meals on the market. If preferred, ground oats, pinhead oatmeal, thirds, biscuit meal, mixed together and fed in a crumbly state answers the purpose just as well. A little pure meat meal may be added as the chicks get better, or, better still, if one has a good bone cutter, give them Nature's own food—green-cut bone, which they will quickly devour. Green-cut bone should only be given two or three times a week, and should be stopped when the birds approach maturity unless it is desired to bring them on to lay. The mid-day feed and the last one at night should consist of dry chick feed. At five weeks old the small feed hitherto used should give place to a mixture which consists of much larger seeds. A little charcoal and salt occasionally added to the soft food will be found very beneficial. Half-boiled rice and chalk are most useful for stopping diarrhoea. Lettuce, dandelions, nettles, etc., are all good and should be finely chopped up. Never overlook the importance of grit. Clean fresh water is also most essential.

OVER-STOCKED LAND.

AT the present time of year a few words of warning from one who has suffered very considerably both in pocket and experience may be of service to other beginners in avoiding the many evils that inevitably follow overcrowding. Contaminated soil is responsible for more trouble in the poultry world than all other forms of mismanagement put together, and the irony of the matter is, that the dangers are known and understood, yet the majority of poultry-keepers, at one time or another, have erred in this direction. As a matter of fact, I erred to such an extent that the entire stock was lost in one year.

The result of overstocking the land is absolutely certain sooner or later to bring about trouble. There is no other of the smaller branches of agriculture that has developed to the same extent as poultry-keeping. The demand for eggs is so enormous, and the prices so good, that a stimulus has been given to the industry, and every year we find more people taking up poultry keeping, and every indication is that it will still further develop. The temptation to overcrowd is, therefore, almost irresistible to the man possessing only a limited amount of land. In his mistaken zeal he attempts much more than his limited opportunities will allow of carrying successfully through. Perhaps he is not satisfied with giving all his attention to the production of eggs for marketing purposes, but endeavours to rear early spring chickens. Or it may be that his ambition is to include ducks, geese, or turkeys among his operations. I have known

cases where all these fowls have been kept on land that was barely sufficient in extent safely to carry more than three or four pens of laying breeds. In these days of intensive and semi-intensive methods of poultry-keeping, there is always a grave danger that people are so encouraged by the reports they read as to what others have accomplished, that they branch out themselves without due regard being had to the limitations of their existing conditions. The result is that they overstock their land to such an extent that it becomes charged with the liquid portion of the manure, and this when allowed to remain in the soil for any great length of time, becomes a great menace to the health of the fowls existing thereon. The birds are too thick on the ground to allow of any plant growth; consequently the manure lies in a poisonous mass. From our remarks, however, it must not be imagined that this unsatisfactory state of affairs only exists where fowls are kept in confinement, since some of the healthiest and most

where, so long, of course, as they do not interfere with other branches of the farm work. Instead of treating them in this manner, they are kept in a large stone or brick outhouse, or in several wooden houses in or near the stack yard, and the birds spend all their time on the same spot of land year in and year out. Being always fed on the same spot, the incentive to forage and wander far afield is removed, so that the land in close proximity to the house becomes quite as impure as a run of restricted area. All this may be entirely obviated by adopting the farm colony system, and taking advantage of everything that will prevent the ravages following closely in the track of contaminated soil.

FALSE DESCRIPTIONS OF EGGS.

The Department of Agriculture for Ireland has successfully prosecuted a Clerkenwell tradesman this week for selling foreign, probably Russian, eggs as "Irish New-laid." The case was admitted



A Record Brood of March Hatched Chickens.

[Copyright.]

profitable fowls are kept in very close quarters. It is a matter that is entirely in the hands of the owner; he must realise exactly the capacity of his land, and conduct his operations accordingly. It is decidedly not only the small class of poultry-keeper who suffers from overcrowding, since unfortunately the same state of affairs is to be found on large farms, farms of such extent that overcrowding seems to be impossible. The owner himself is the last man who suspects that contaminated land is the cause of trouble. It is, however, entirely the farmer's own fault when disease appears. The mistake is that the fowls are allowed all to congregate in one place. Why are the fowls not enjoying the benefit of a run on the pasture land? They should be moved here, there, and every-

by the defendant, whose only plea was that in his business large quantities of Irish eggs were sold, but that at the time mentioned he had none and sold those upon which the charge was based thinking "they were as good" as Irish. He had, however, given a receipt on which the eggs were described as Irish. In view of the admitted facts, but considering that he had been over forty years in the trade and had never been charged before, the magistrate imposed a nominal fine of 10s., with five guineas cost.

To that point the case was clear, and the decision was given entirely upon the false designation as Irish. The question of new-laid was not brought before the court. It is not too much to say that for every instance of fraudulent deception as to the

place of origin, there are a hundred in which the purchaser is misled as to the condition and quality. We are informed that the eggs referred to in this case were not merely foreign, but also were preserved and probably six months old, so that they were in no sense even to be designated as fresh. That is a point which requires to be pressed forward as it is of even greater importance.

POULTRY CULTURE IN SWEDEN.

By W. A. KOCK.

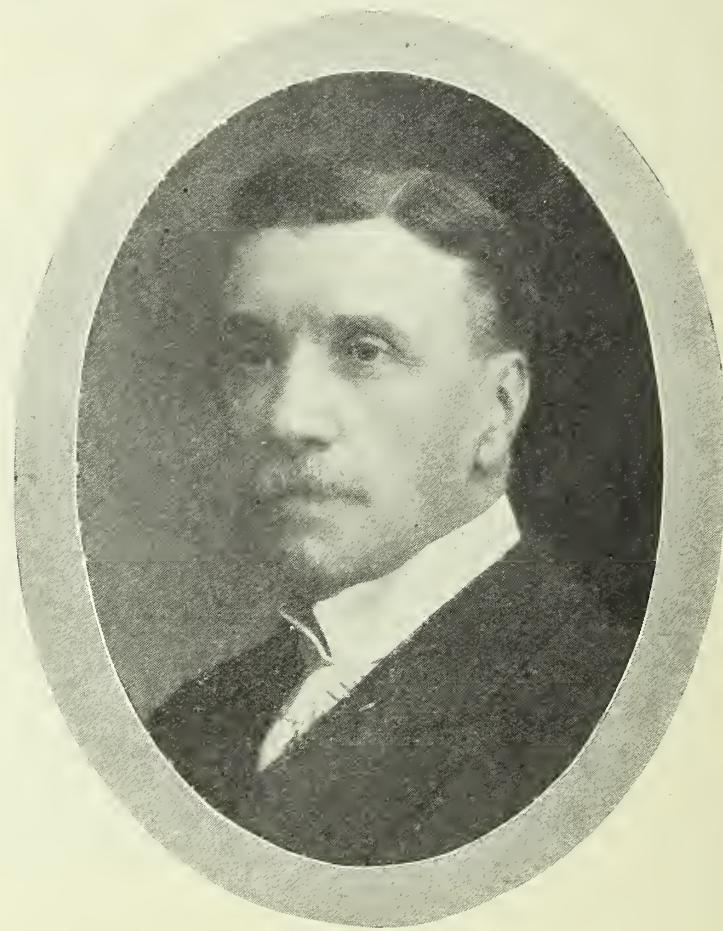
Adviser in Poultry Culture to the Royal Danish Agricultural Society.

In many parts of Sweden, particularly the south, the conditions for poultry breeding are good, and the inhabitants there are awakening to the possibilities of egg production. Since 1897 there has been no excess of exports and at the present time large quantities of eggs are imported annually, chiefly from Russia and Finland. Last year the total export amounted to 48 millions and the latest reports show that there are now 5 million hens in Sweden compared with 3,250,000 in 1905. Denmark, an infinitely smaller country, has no less than 12 millions. The small farmers are still indifferent to poultry keeping, but on the other hand the landlords are alive to the possibilities of the industry and many of them have erected large poultry houses and established extensive poultry farms, only a few of which, unfortunately, have been successful. The farms are generally arranged on the American plan. In other places the poultry house forms part of the farm buildings, small movable houses being also occasionally used.

Plymouth Rocks, White Wyandottes, and White Leghorns are frequently met with, but the most common breed is a mongrel light Leghorn. Large numbers of the above breeds have been imported from America time after time. In the south of the country and especially at the large country seats, geese and turkeys, many of a native breed, are reared in large numbers, but there are not so many geese in Sweden as formerly owing to a reduced demand. Ducks, chiefly White Pekings, are mostly kept in the south. Incubators are used more commonly in Sweden than in Denmark.

Egg circles, on the Danish plan, have been formed in different parts of Sweden, but the eggs are sold to private dealers in the large towns where egg-packing stations have been established; the eggs arrive in good condition and well packed. In the future Sweden will probably be more of an importing country owing to the growth of her manufactures. Fattening is carried on at the country seats and in an establishment connected with one of the egg packing stations. The Spring chickens produced are of better quality than in Denmark. Large quantities of dead poultry are imported from Russia and better qualities from Belgium and France.

Sweden has one large poultry society with a satisfactory membership. It sends out advisers in poultry culture, arranges exhibitions and lectures, and gives prizes for the best poultry yards. The society has also established a school where systematic courses in poultry keeping are held and students can obtain grants varying from £10 to £12. Under the auspices of the Society are also some 30 breeding centres for fowls, ducks, geese and turkeys. The first egg-laying competition took place two years ago and lasted twelve months, when the best Leghorn reached a total of 240 eggs. A Government grant of £110 in 1905 has now been increased to £1,100, and arrangements are at present being made for a great Scandinavian Poultry Exhibition and Conference at Stockholm in 1916.



Mr. C. E. Brooke.

Master of the Poulterers' Company of London. Mr. Brooke occupied this position in the year 1894-5, and now, after twenty years, has been again called to the same high and honourable position.

Farm Labourers' Fowls.

A correspondent of the *Irish Times* writes:—"If the farm labourers and their wives would take advantage of the Department's teaching, and use their plots of ground for poultry-rearing in its many branches, many of them could double their incomes, and more than double them; but it does not seem to be in them. They would not have to pay for labour, or for rent, and it is not difficult to make from 10s. to 20s. a week profit under those conditions. It is when you have to add the upkeep expenses that the trouble comes, unless one is prepared to invest two or three thousand pounds and go in for things in a very large way." This applies to our side as much as to the other.

CHICKEN REARING.



HE demonstration by Mr. F. G. Paynter of his system of producing table poultry which has been carried out during the past season at Haslington Hall, near Crewe, under the auspices of the Board of Agriculture and Fisheries in conjunction with the Cheshire County Council, came to an end in December last.

When the Board arranged with Mr. Paynter to undertake this demonstration, it was decided to inquire whether the Cheshire County Council would be disposed to co-operate with the Board in making suitable provision for it. This the County Council at once agreed to do, and an arrangement was made between the Small Holdings Committee and the Education Committee by which Haslington Hall, with 14 acres of land, of which only 4 acres were devoted to the demonstration, was placed at the disposal of the Board for the purpose. Haslington Hall is situated in the middle of a newly-formed small holdings colony of about 750 acres, let in 19 holdings, and from that point of view it was particularly suitable for the purpose. The field in which the Demonstration was conducted, however, was rather heavy, and in this and some other respects it was acknowledged that a more suitable spot might have been found. Haslington Hall, however, was the only vacant house on the County Council Small Holdings, and it had so much to commend it that, in spite of the fact that the particular field (selected on account of its convenience in other ways) was not of the kind most suitable for poultry keeping, the Council's offer was accepted.

Incubation was commenced in the first week of December, 1912; the first batch of eggs (110) was put in the incubator on December 8th. For some time the work chiefly consisted in the care of the incubators and the preparation of the pens, brooders and appliances. The incubators used were the following:

2 Cyphers, hot air incubators of 240 egg capacity.				
I	"	"	300	"
I Hearson's	"	"	240	"

The first chickens were hatched towards the end of December, 1912, and from that time onwards the process of rearing continued till the end of the demonstration. An incubator, containing 240 eggs was started each week, except every fourth week, when the largest incubator, containing 300 eggs, was used. The eggs were all purchased and were obtained from various sources where the stock was known to be suitable. The number of eggs purchased and incubated and the resulting number of chickens hatched is shown in Table I. From this table it will be seen that the percentage of chickens hatched to eggs purchased was never more than 54 per cent., and the average is only 41 per cent. If,

however, allowance is made for the number of infertile and broken eggs, the percentage rises to an average of 51 per cent. Each hatch thus consisted of about 120 chickens, from approximately 240 eggs. This relatively small proportion of chickens to eggs was partly due to shaking in transit, and it is probable that better results would have been obtained if reliable eggs of suitable kinds could have been purchased locally. Mr. Paynter endeavoured to arrange for a local supply, even presenting well-bred cockerels to the small holdings tenants who had suitable hens, and undertaking to purchase eggs for sitting at 1s. per dozen above the current local price, but his efforts in this direction were not attended with much success.

From the incubators the chickens were moved to the brooders. For the first week each batch was housed in two brooders under cover close at hand; at the end of a week the chicks were moved to larger brooders in the rearing field. These larger brooders they used for six weeks. Half-way through this period, during which time they grew rapidly, the batch, consisting on the average of 120 chickens, hitherto housed in two brooders, was now divided amongst three brooders, each of which thus contained about 40 chickens. This division into batches of forty continued during the time they remained in the brooders.

When the chickens were seven weeks old, they were removed to larger wire runs (100 yards by 10 yards) and housed in what are known as Sussex arks. The chief advantage claimed for this type of poultry house is that adequate ventilation is secured; the arks are also cheap, light, and portable. The provision of slatted floors with a movable floor below enables the manure to be collected easily and removed for storage. Sixty chickens were placed in each ark, and at the age of 12 weeks the number per ark was reduced to 40 by transferring 20 from each ark to other arks placed in adjacent runs.

At about the end of 16 weeks from the date of hatching each batch of chickens was ready for sale. The plan adopted by Mr. Paynter for disposing of them was to contract beforehand for the sale of the whole of his output to a poultrey near London at the following prices:—

			s.	d.
During the month of April			3	9
,,	May		3	6
,,	June		3	3
,,	July		3	0
,,	August		2	9
,,	September		2	6

The chickens were sent away alive in crates containing 12 each. The purchaser paid carriage. This arrangement is satisfactory from the point of view of both producer and purchaser, because not only is the producer saved the trouble and expense of killing, plucking, and dressing the birds, but the

purchaser's poultryman is able conveniently to devote time in the afternoons to preparing the fowls for sale next day. Table II. shows the number of fowls reared and sold and the prices obtained for them.

The following statement contains a summary of the food consumed and of its cost :—

			£	s.	d.
3,437 lb. Chick feed ...	...	24 10 1			
7,071 „ Biscuit Meal	...	40 5 8			
711 „ Oatmeal ...	...	5 3 1			
389 „ Rice ...	...	3 2 3			
1,899 „ Bran	...	6 18 9			
2,862 „ Meat and Fish Meal	24	9 3			
4,475 „ Barley Meal	...	19 18 4			
21,210 „ Sharps	...	77 6 7			
18,985 „ Wheat with 10 per cent. of Maize	...	68 3 5			
		<hr/>			
		269 17 5			
Grit ...	...	5 10 0			
		<hr/>			
Total food bill	£275	7 5			
		<hr/>			

A summary of the essential details of Mr. Paynter's system was printed and distributed to those who came to see the demonstration, as it was felt that if some definite record of the kind were available it would aid visitors in understanding the object of the demonstration.

The profit and loss account (Table III.) was prepared for the Board by Mr. J. Thornely, Chartered Accountant, Chester. By it the net profit on the year's working is shown to be £55 1s. 2d.; but in arriving at this figure certain expenses have been included which a small holder carrying on the work would probably not have incurred. Thus with regard to the item of £19 19s. 7d. for carrying and carting, Mr. Paynter had to pay for carting chickens, poultry food and other things between Haslington and Crewe, whereas a small holder would doubtless do this work himself. Similarly, expense for wages and work of an experimental nature would not have been incurred by a small holder, while the balance of the amount paid for oil (£3 16s. 1d.) represents the estimated value of the oil used for domestic purposes. On the credit side of the account there is little doubt that the receipts for the sale of the 4 tons of collected

TABLE I.—STATEMENT OF EGGS INCUBATED AND NUMBERS OF CHICKENS HATCHED.

Date.		No. of Hatch.	Bought.	Broken.	Infertile.	Not hatched.	Chicks.	Cost of Eggs.	Percentage hatched on total number of eggs incubated.	Percentage of chickens hatched after allowing for broken and infertile eggs.
December	8th ...	1	110	4	14	54	38	1 7 6	34	41
"	15th ...	2	254	5	23	118	108	2 16 3	42	48
"	22nd ...	3	344	4	56	119	165	3 16 7	48	58
"	29th ...	4	274	7	46	79	142	2 14 5	52	64
January	5th ...	5	237	—	54	99	84	2 9 4	35	46
"	12th ...	6	261	8	55	106	92	2 13 11	35	46
"	19th ...	7	312	20	79	108	105	2 19 3	34	49
"	26th ...	8	404	17	96	156	135	3 18 9	33	46
February	2nd ...	9	325	15	73	133	104	3 2 8	32	44
"	9th ...	10	169	1	17	59	92	1 15 2	54	60
"	16th ...	11	418	7	66	175	170	3 12 11	40	49
"	23rd ...	12	296	12	43	121	120	3 1 8	41	50
March	2nd ...	13	355	4	58	173	120	3 1 10	34	41
"	9th ...	14	259	8	40	89	122	2 3 0	47	58
"	16th ...	15	405	11	37	167	190	3 7 6	47	53
"	23rd ...	16	300	5	31	124	140	2 10 0	47	53
"	30th ...	17	432	4	77	224	127	2 10 7	29	36
April	7th ...	18	240	—	31	91	118	1 7 6	49	56
"	14th ...	19	389	37	51	133	168	2 3 10	43	56
"	20th ...	20	210	20	15	98	107	1 10 0	45	52
"	26th ...	21	347	22	54	103	168	2 3 5	48	62
May	4th ...	22	264	12	36	89	127	1 13 0	48	59
"	11th ...	23	360	7	66	117	170	2 5 0	47	59
"	18th ...	24	360	8	34	153	165	2 5 0	46	52
"	25th ...	25	360	15	115	115	115	2 5 0	32	50
June	1st ...	26	360	9	79	116	156	2 5 0	43	57
"	9th ...	27	490	24	114	227	125	2 14 8	26	36
"	16th ...	28	466	4	97	170	195	2 16 1	42	53
"	24th ...	29	240	4	49	97	90	1 10 0	38	48
"	29th ...	30	626	—	84	272	270	3 17 0	43	50
			9,897	294	1,690	3,885	4,028	76 16 10	Average, 41	Average, 51
					Day old chickens bought, 135			3 3 5		
								£80 0 3		

Average cost of eggs per chicken hatched, 4½d.

TABLE II.—STATEMENT OF SALES.

Date.			No. of Birds.	Weight.	Value.
				lb.	£ s. d.
April	12th	...	37	148	6 18 7
"	19th	...	95	356	17 16 3
"	26th	...	72	270	12 18 0
May	13th	...	88	332	15 8 0
"	20th	...	48	192	8 8 0
"	27th	...	96	384	16 16 0
June	3rd	...	96	384	16 4 0
"	10th	...	132	528	21 9 0
"	17th	...	89	346	14 9 3
"	24th	...	111	444	18 0 9
July	2nd	...	110	440	17 5 0
"	8th	...	111	444	16 13 0
"	15th	...	119	530	17 18 6
"	22nd	...	108	486	17 4 0
"	29th	...	194	658	25 4 0
August	2nd	...	104	416	14 19 0
"	9th	...	88	352	12 0 4
"	16th	...	106	424	14 11 9
"	23rd	...	255	1,142	34 14 2
"	30th	...	54	243	6 10 0
September	6th	...	31	153	4 4 9
"	13th	...	140	560	18 8 0
"	20th	...	56	224	7 0 0
"	27th	...	54	216	6 15 0
October	4th	...	166	664	20 16 6
"	11th	...	106	424	13 5 0
"	18th	...	98	392	12 5 0
"	25th	...	151	604	18 17 6
November	1st	...	78	312	9 15 0
"	8th	...	73	258	9 2 6
"	15th	...	102	408	12 15 0
"	22nd	...	74	296	9 5 0
"	29th	...	56	224	7 0 0
December	6th	...	98	372	13 12 6
"	13th	...	107	342	7 18 9
Total			3,471	13,968	496 8 1

Average weight of chickens when sold ... 4.024lb.
" price received per pound ... 8½d.

manure should have been larger, and no value is placed on the manure distributed in the runs. It is also worthy of note that the average weight of the birds when sold was slightly over 4lb.*

In this connection it should also be mentioned that there was a considerable loss, the extent of which could not be ascertained, from depredations of stoats, and from other unavoidable causes.

If the items for wages, experimental work, and oil used for domestic purposes are omitted, as it is suggested they may properly be, the net profit is shown to be £88 12s. 10d.

There are several reasons why this profit and loss account cannot fairly be regarded as a true measure of the success of the system and of its working. The actual work of rearing poultry was seriously interfered with by the main purpose of the demonstration, viz., the reception of so large a number of visitors. Apart from the fact that a great deal of time was necessarily devoted to showing them round, it is a well-known fact that growing

TABLE III.—POULTRY DEMONSTRATION, HASLINGTON HALL, CREWE.

Profit and Loss Account for year ended 30th November, 1913.

Dr.	£ s. d.
1913.	
Nov. 30th.—To Eggs purchased ..	76 0 5
,, Chickens ..	4 1 1
,, Oil used (three-fourths of amount paid) ..	11 8 3
,, Food purchased ..	275 7 5
,, Peat Moss ..	1 4 0
,, Medicine ..	0 13 3
,, General Expenses ..	1 13 5
,, Rent of 4 aeres at 45s. per aere	9 0 0
,, Interest on Capital, say on £300 at 5 per cent.	15 0 0
,, Depreciation of Plant on £219 3s. at 7½ per cent...	16 8 9
,, Cheque Books ..	0 10 0
,, Bank Commission ..	0 4 6
Profit carried down ..	88 12 10
£500 3 11	
1913.	
Nov. 30th.—To Carriage on Eggs and Carting	19 19 7
,, Wages ..	2 16 0
,, Experimental ..	7 0 0
,, Oil (balance of amount paid)	3 16 1
Net Profit ..	55 1 2
£88 12 10	
Cr.	
1913.	
Nov. 30th.—By Chickens sold, 3,471 ..	496 8 1
,, Manure sold ..	2 10 0
,, Eggs sold (from Pullets reared) ..	1 5 10
£500 3 11	
1913.	
Nov. 30th.—By Profit brought down ..	88 12 10
£88 12 10	

I have drawn up the above Account of the Poultry demonstration held at Haslington Hall, Crewe, for the twelve months ended November 30th, 1913, and have examined same with the books and vouchers kept by Mr. Paynter, and, according to the information and explanations given me, certify the same as correct.

January 9th, 1914.

(Signed) J. THORNELY,
Chartered Accountant,
Chester.

chickens will not thrive properly if they are constantly disturbed by the presence of strangers. In this case whatever effect was produced could not be avoided, because the demonstration was purposely conducted for the information of people who could only derive the desired benefit from it by inspection. But the very success of the work from the demonstration point of view had to be paid for, to some extent at least, by a financial loss. Moreover, as the Cheshire County Council undertook the work with an educational object, the preponderance deliberately given by Mr. Paynter to the demonstrative rather than to the financial aspect was fully justified, the purpose of the demonstration being not to attain the greatest

possible financial return, but to illustrate to the public how to rear chickens in a way adapted to the needs of the small holder, and to show in full working order methods and appliances which are capable of producing practical and remunerative results.

The Board desire to give full acknowledgement to the assistance given to the demonstration by the Cheshire County Council, and to the unremitting care and attention bestowed upon the work for so many weeks without a break by Mr. Paynter himself.

During the current year Mr. Paynter is conducting a similar demonstration in Cambridgeshire.—(*Journal of the Board of Agriculture, March, 1914.*)

THE AMATEUR'S BREEDING SEASON.



Scompared with the professional or skilled poultry-keeper, it may be said that as a general rule the amateur loses ground in commencing, and again in the manner in which he conducts his breeding and rearing operations. The first is very often due to inability to devote sufficient time to the stock at a critical period, for if one would have early fertile eggs and early chickens there is much to be done in the way of preparation before the actual breeding season commences. In some cases that have come to my notice late breeding has become chronic. By commencing with late hatched pullets, chickens are not obtained until well on into the spring, and the pullets amongst them are not ready to lay in their turn until the end of next winter; and so it goes on year after year, and the poor amateur never seems able to catch up the time lost at the start. The moral is obvious. If you are making a start with poultry, be sure to obtain some young, but early-hatched and well-developed, stock to breed from. If you have already commenced and have neglected this very important precaution, and find yourself late every season, do not waste any more time lagging in the rear, but make a fresh start in a more satisfactory manner. It is difficult to persuade an amateur who has in his inexperience made a bad beginning with undeveloped or degenerate stock that the very best thing he can do is to cut the loss and start again. Usually he has an idea that he can put matters right in a year or two, or that they will right themselves in course of time. And so he will go struggling along, only commencing to breed when other people are nearly finished, always short of eggs, especially in winter, and scarcely knowing what it is to see young stock thrive and develop as they should. This is not a fanciful picture, but what is actually happening to scores of amateurs who have bought badly at the commencement. He is a wise man who lays a solid foundation to his operations by purchasing

stock from a genuine breeder with a reputation for his fancy or utility strains, as the case may be; and he is a lucky man who buys by chance and happens to get something good. But in this case it is easier and cheaper in the long run to be wise than lucky.

To the average amateur quality is of more importance than quantity—that is to say, it is better that he should breed a few chickens from good stock, and do them well, than encumber himself with a lot of young birds of no particular merit. In a great many cases people who keep a limited number of hens, up to thirty or forty, will run two or three cocks with them, and set the eggs as they come. I have even known an amateur fancier who had only three good hens in his breeding-pen to bring in three more inferior birds, and set eggs from one and all just as they came. Anyone would know that this man was doing wrong, but it is not so generally understood that the selection of breeding stock is just as important when utilitarian properties are the object. In a large flock there are good, bad, and indifferent layers, and it is only by selecting the former and leaving out the other two grades that we can raise the standard of the useful and reduce the drones to the minimum. Even if the best birds are not laying just now, do not fall back upon the others in order to save time. Both in fancy and utility poultry-breeding it is merely wasting opportunities to breed from any birds that are not up to a certain standard.

April is by many people regarded as the best month for hatching, and for utility stock of the medium heavy breeds, such as Wyandottes, it certainly is, for as a general rule the pullets are early enough to start laying before the autumnal changes of weather and late enough to miss the summer moult that spoils the profit of so many early-hatched birds. Therefore, set as many eggs of the medium heavy breeds as you require within

the next week or two, and when you have set sufficient to produce as many chickens as you require and can manage properly, stop short.

And that brings us to the sale of eggs for sitting. Many amateurs complain that they cannot find a ready sale for their eggs, and that is generally because they ask too much money. They must not expect to realise the same prices as the professionals and the successful breeders who, in many cases, have spent half their lives in bringing their strains up to a certain standard of excellence, and who have devoted hundreds of pounds to developing their businesses. The amateur's eggs may produce just as good chickens as those of the professional. Sometimes they do, and sometimes they do not. At any rate, the big firms are entitled

side of the business there is plenty of fun to be had, and not a little disappointment. The amateur who cares only for utilitarian properties can procure eggs from some of the best strains for a moderate outlay, and he is less likely to meet with disappointment than the would-be fancier who imagines the purchase of a guinea sitting the sure road to a win at the Dairy or the building up of a famous winning strain. In buying eggs from fancy strains the safest plan is to know the party you are purchasing from. If you happen to be acquainted with a fancier who, to your knowledge, is selling eggs from a pen of good birds that he himself is actually breeding from, those eggs would be worth buying, and even though he be a comparatively small fancier it is better to go to him than to an



At a Russian Poultry Show.

[Copyright]

to charge for their reputation, for their strain, for the time and money they have put into their work, and for the superior stock they possess, though the same stock may not actually be in the breeding-pens they sell eggs from. To compete with rivals of this class, the amateur can do no more than keep his prices low. When his eggs are priced at the same rate as those of the professional, the public will invariably prefer to take their chance of getting something good from the latter; but when the amateur charges one-third less he may do a fair amount of business, and if he reduces his prices by one-half and describes the merits of what he has to sell, he can hardly fail to secure a good share of patronage.

As for buying eggs from other people, now is the time to invest a little money. Most amateurs like to have one or two sittings every year in the hope of something good turning up, and in the fancy

unknown person who may not sell eggs from his best birds. And the worst of egg buying is that it is so difficult to tell who does sell eggs from his best pens. Among the best breeds for amateur egg buyers to invest in are white and partridge Wyandottes, buff, black, and white Orpingtons, black, white, and brown Leghorns, Minorcas and Barred Rocks. Black Wyandottes are still a big gamble, and blue Wyandottes and blue Leghorns are altogether in the clouds for the present.

Irrigation Farms and Poultry.

Mr. James Hadlington, the recently appointed poultry expert to the New South Wales Department of Agriculture, calls special attention in the *N.S.W. Agricultural Gazette* to the opportunities for poultry farming on the Murrumbidgee irrigation area, and states that if lucerne is grown for the fowls, the other food should not cost more than 2/2 per annum.

POULTRY COOKERY.

DAINTILY DRESSED SPRING CHICKENS.

A FRENCH STEW: Cut up half a pound of prime streaky bacon into slices about a quarter of an inch thick, then into pieces about two inches long, and after frying these lightly, drain thoroughly and put them into a saucepan; add a dozen shallots, two dozen button mushrooms, a dozen chestnuts roasted and peeled, and the red part of a large carrot cut in julienne strips, all of which have been previously cooked; then add one large, or two small, properly-prepared chickens cut up into small neat joints, cover the whole with good brown gravy and stew gently and steadily for a quarter of an hour, after which add a light seasoning of salt and pepper, and a glass of white wine, and continue the stewing for a few minutes longer until the flesh is quite tender. When done enough, arrange the joints neatly in the centre of a hot dish with the mushrooms, etc., as a border round about; thicken the gravy just a little with brown roux and bring it to the boil, then pour it carefully over the chicken, and serve very hot.

CHICKENS A LA REINE: Put an ounce and a half of fresh butter into a saucepan and when it is dissolved stir in an ounce of fine flour; do this very gradually, and when quite smooth add half a pint of white stock and a seasoning of salt and pepper, and continue stirring briskly with a small wooden spoon until the mixture has boiled for three or four minutes, then put in the chickens which have been cut up neatly, add a bunch of savoury herbs, a blade of mace and an onion stuck with three or four cloves, and simmer gently until the flesh is quite tender. Arrange a neat firm border of well-mashed and pleasantly seasoned potatoes on a hot dish and when the chickens are done enough dish them up in a pile in the centre. Strain the liquor into a small clean saucepan, thicken it to the desired consistency with fresh egg yolks, stir constantly until boiling point has been reached, add more seasoning if required, and pour, or spoon, it over the chickens, but not over the border; ornament the latter with tiny sprigs of parsley, arrange a good supply of daintily fried bacon rolls round the base, and send to table very hot.

CHICKENS AND TONGUE: This delicious dish is equally enjoyable, whether served hot or cold. Boil in the usual way a couple of plump birds and a small tongue; then when done enough, brush the tongue over with glaze—after trimming it neatly, of course—and place it in the centre of a large hot dish with a chicken on either side of it. Cover the birds with good creamy white sauce and sprinkle them lightly with very finely chopped parsley, garnish the edge of the dish with a border of Brussels sprouts, or with carefully boiled cauliflower divided into small sprigs, and serve the whole very hot, accompanied by more sauce in a hot sauce-boat. If preferred cold, prepare the chickens and tongue in exactly the same manner as

already directed, but omit the vegetables; garnish the dish with parsley and slices, or quarters, of fresh lemon, and serve a well-mixed, pleasantly-seasoned green salad as an accompaniment.

FRIED CHICKENS WITH TOMATO PURÉE: Half cook the birds, either by roasting or boiling, then when cold cut them up into small neat joints and slices; dip these first into beaten egg, then into breadcrumbs which have been seasoned with salt, pepper, and grated nutmeg, and mixed with an equal quantity of grated cheese; press the covering in firmly and repeat the process a second time so as to render the coating quite smooth and thick, then fry the birds in clarified fat until coloured a dainty golden brown; drain thoroughly and dish up neatly on a purée of tomatoes prepared as below, garnish round about with fried croûtons or sippets of crisp hot toast and sprigs of parsley, insert a few more sprigs of parsley amongst the pieces of chicken, and serve the whole as hot as possible.

To prepare the tomato purée proceed as follows: Choose a dozen sound ripe tomatoes and after removing the stalks and the green part that adheres to them, squeeze out the pips and cut the fruit in pieces; put these into a stew-pan with three or four tablespoonfuls of gravy or good stock, a tablespoonful of mixed powdered herbs and a dessert-spoonful of strained lemon juice, and simmer gently until quite soft, then pass the whole through a fine wire sieve, rubbing the pulp through with the back of a small wooden spoon. Put into a stewpan an ounce of fresh butter which has been mixed smoothly with a tablespoonful of flour, and, when dissolved, add the tomato pulp and stir over a moderate fire until the whole is bubbling hot and of a smooth thick consistency, when it is ready for use.

MAYONNAISE OF CHICKEN: Prepare and roast in the usual way one or more birds, and, when cold, cut them up neatly and place them in a bowl; sprinkle them freely with salt, pepper, vinegar, and salad oil, toss well, and set in a cool place for an hour or two before using. Have ready some carefully cooked green peas, French beans, or any other vegetable which may be preferred, and after seasoning these pleasantly form them into a flat bed on a convenient-sized dish, and arrange the prepared chicken in neat order on the top. Pour over sufficient well-made mayonnaise sauce to cover entirely the whole, garnish round about with hard-boiled eggs cut in quarters, fancifully-cut slices of pickled beetroot, and sprigs of carefully-washed and pleasantly-seasoned watercress, and serve.

Progress in Denmark.

Redoubled efforts are being made by the Danish Government to still further advance the poultry industry of that little country, and a large amount of interest is being displayed in the work. It is proposed to establish several additional breeding centres.

VALUES OF IMPORTED EGGS AND POULTRY.

Householders are painfully aware that eggs and poultry have been dearer during the first two months of 1914 than ever known before. Eggs have maintained their high rates to a later period in the season than in former years. This is not owing to the machinations of traders but to a rapidly increasing demand, and also to diminution of foreign supplies in the case of eggs, which whilst greater in volume than in the first two months of 1912, were fewer by 370,191 great hundreds than in the corresponding period of 1913, that is, a fraction under 14 per cent. drop from last year. As these imported eggs represent about forty per cent. of the total consumption in the United Kingdom, such decline has had an important influence on prices.

The following table shows the relative quantities and values of eggs in the first two months of 1912, 1913 and 1914 from the leading countries, together with the totals.

The increase in 1913 as compared with 1912 was mainly though not entirely in Russian and Danish, both of which have declined considerably this year.

From a trader's and consumer's point of view the great factor is the average value, which shows a constantly upward tendency, and in the last period a rapid one. Below are given the declared average values in the three periods already named :

Average values per Great Hundreds of Eggs.

COUNTRIES.	1912		1913		1914	
	s.	d.	s.	d.	s.	d.
Russia	9	0 $\frac{3}{4}$	8	11 $\frac{1}{2}$	9	8 $\frac{3}{4}$
Denmark	12	5 $\frac{3}{4}$	12	0 $\frac{3}{4}$	13	0 $\frac{3}{4}$

Germany	...	8 11	8 6 $\frac{3}{4}$	9 6 $\frac{1}{2}$
Netherlands	...	10 1 $\frac{1}{2}$	10 10	10 9 $\frac{1}{4}$
France	...	10 5 $\frac{3}{4}$	10 0 $\frac{3}{4}$	12 10
Italy	...	11 6 $\frac{1}{2}$	10 8 $\frac{1}{2}$	11 10 $\frac{1}{2}$
Austria-Hungary	9	9	9 1 $\frac{1}{2}$	9 9 $\frac{1}{2}$
Other Countries	7	5 $\frac{1}{2}$	7 3	7 7 $\frac{1}{2}$

The lower average values of 1913 as compared with 1912 have been more than covered, and the total average this year is greater by 8 $\frac{1}{2}$ d. per 120 than in 1913.

In poultry, quantities have not increased on the entire imports, although prices have done so. The quantities and values for the last three years are given below.

Although the total quantities were practically the same in 1914 and in 1913, the relative supplies have varied considerably. In 1913 Russians were 53.4 per cent. of the total, in 1914 these had advanced to 81.99 per cent. On the other hand those from the United States were 31.79 per cent. of the total in 1913, and only 6.08 per cent. this year.

The average values per cwt. were as follows.

COUNTRIES.	1912		1913		1914	
	s.	d.	s.	d.	s.	d.
Russia	56	0	56	4	62	9
France	102	0	81	2	102	5
Austria-Hungary	60	0	71	3	73	6
United States	65	0	77	6	78	3
Other Countries	62	0	81	4	80	10

The total average values increased from 60s. per cwt. in 1912 to 66s. in 1914, which is equal to nearly 3d. per lb.

Countries	1912		1913		1914	
	Quantities. gt. hds.	Values. £	Quantities. gt. hds.	Values. £	Quantities. gt. hds.	Values. £
Russia	479,015	217,015	675,728	303,072	472,193	229,864
Denmark	342,421	213,526	555,576	335,423	418,762	273,603
Germany	89,672	40,222	124,266	53,672	143,222	68,078
Netherlands	78,584	38,813	122,275	66,285	171,627	92,517
France	79,023	40,674	71,835	36,201	75,720	48,608
Italy	151,015	87,273	163,976	87,947	195,028	115,741
Austria-Hungary	190,665	291,484	228,564	104,306	176,012	86,286
Other Countries	712,599	266,026	788,335	285,957	707,800	269,714
Totals	2,123,073	994,833	2,730,555	1,272,863	2,360,364	1,184,411

Countries.	1912		1913		1914	
	Quantities. cwts.	Values. £	Quantities. cwts.	Values. £	Quantities. cwts.	Values. £
Russia	52,662	146,756	58,410	164,563	90,994	255,727
France	2,790	14,327	4,526	18,362	2,546	13,044
Austria-Hungary	9,558	28,670	8,140	29,000	5,688	20,903
United States of America	9,211	30,057	34,967	135,000	6,705	26,251
Other Countries	12,143	40,305	3,608	14,677	5,047	20,397
Totals	87,143	269,115	109,961	362,191	110,980	366,322

GERMAN POULTRYDOM.

III. GOVERNMENTAL SUPPORT.

THE material confronting us under this heading and clamouring for inclusion within the limited confines of this chapter is so overwhelming in its extensiveness as to render condensation without sacrifice of much that is important a matter of more than ordinary difficulty. One of the principal obstacles in this connexion is the system of "decentralisation" or "Home Rule" in household affairs enjoyed by the 26 States forming the German Empire which makes it impossible to treat the subject as an Imperial one and compels us to employ an equally decentralised method of attack, taking care however to maintain our lines of communications as marked out by the "red tape" of official reports arranged in chronological sequence.

Working back then to the beginning, we find that the year 1898 must be set down as the one heralding the dawn of a new era by the official recognition, in Prussia, of Poultryculture as a "deserving industry" (vide the ministerial rescript of July 26th, 1898). Anterior to that date, some of the Prussian Provinces (notably Saxony, Hanover, and Hessen-Nassau) and several other German States (Bavaria, Wurtemberg, Baden, and Alsace-Lorraine) had certainly given some half-hearted attention to the subject, but merely in connexion with general agriculture, with the result that the control of Government grants was left entirely in the hands of Provincial Agricultural Chambers, which august bodies would sometimes remember, sometimes forget, the needs of Poultrydom in accordance with the more or less sympathetic inclinations of their members. Small wonder then that in those early days of the struggle for existence frequent complaint could be heard in interested circles of the authorities' readiness to expend the mere trifle of M. 100,000 (£5,000) in the purchase of a thorough-bred stallion, while the request for a grant of the "enormous amount" of M. 100 (£5) towards the acquisition of a breeding pen of poultry had to meet with a curt refusal!

Turning to actual figures we find that the total contributed by all States of the Empire during the 10 years ending 1907 towards the support of poultry culture amounted to M. 1,195,826 (about £597,500), of which sum Prussia alone had furnished more than $\frac{3}{4}$ ths., viz., M. 945,000, Bavaria, M. 63,000, Saxony, M. 12,000, Wurtemberg, M. 20,000, Baden, M. 70,000, Hesse, M. 34,000, and Alsace-Lorraine. M. 36,000. The amount credited to the Kingdom of Saxony looks very modest in comparison with other states, but let me explain that private individuals and local societies have there prepared the ground in such a thorough manner as to leave little scope for Governmental action. Saxony in fact is and has been for a number of years a veritable fancier's Paradise, and

might fitly be termed the "intellectual centre of German poultrydom" whence by means of the two most prominent poultry journals of the Empire, published at Leipzig and Chemnitz respectively, a true appreciation and knowledge of fancy matters has been disseminated in all directions. In the case of the Grand Duchy of Baden the relatively large amount is explained by the inclusion of several sums (in all about M. 30,000) spent before 1898. Comparing the financial contributions of the various Prussian Provinces we find that Saxony ranks first with M. 180,000, then follows Brandenburg M. 136,000, Rhenish Prussia, M. 110,000, and Hessen-Nassau, M. 100,000; the amounts granted by the other provinces vary from M. 1,800 to M. 72,000. Roughly estimated the average annual contribution of the whole of the Empire for the 10 years ending 1907 has been at the rate of M. 120,000 or £6,000.

Arrangements were then made to establish at considerable expense, breeding and teaching centres in Eastern Prussia, Pommerania, Brandenburg, Prussian Saxony, Rhenish Prussia, and in the Bavarian districts of Upper Bavaria and Mid-Franconia. (In this category the model poultry farm at Rüdesheim on the Rhine,—a private property under the supervision of the Wiesbaden Chamber of Agriculture—also deserves to be mentioned). These establishments were to act as centres of provincial poultry endeavour, they were to make experiments and arrange lectures and demonstrations. In addition to these official centres, a number of private yards (for instance the one owned by Frau von Vogelsang, at Hovedissen, Westphalia, and by Councillor Schwarz, at Grubschütz, Saxony) were placed at the Government's disposal for similar purposes.

A further and most important step taken in the right direction was the foundation of breeding stations, with the support of the Chambers of Agriculture or Agricultural Societies in all parts of the Empire, excepting the Grand-Duchy of Mecklenburgh, and a few other minor territories. Their number in 1906 was 2995 including 2,289 for fowls, 429 for ducks, 253 for geese, 23 for turkeys, and 1 for guinea fowls. Bavaria ranked first with 756 stations, in the Prussian Provinces their number varied considerably, viz., from 18 (in Pommerania) to 271 (in Rhenish Prussia). An interesting map attached to Mr. Oscar Knispel's well-known work on "Governmental Measures for the promotion of Utility Poultry breeding in Germany," published on behalf of the German Agricultural Society, gives a very clear indication of the situation of these Breeding Stations, and at the same time—by means of a cleverly arranged system of signs and colours—of the breeds kept at these places. Leghorns are prime favourites, ruling the roost at

nearly one half of the stations, viz., 1,173 (the brown variety at 941), Wyandottes rank next with 412 stations (347 for the white variety), then follow: Minorcas, 254, Plymouth Rocks, 91, Alsatians, 72, Malines 48, Ramelsloher 47, Orpingtons 43, Nassau layers 30, Faverolles 25, Upper Bavarians 12, Augsburger (another Bavarian type) 12, Langshans 10, Nassau fattening breed 9, Hamburgs 6, Bergish Crowers 5, Lakenfelder 5, East Frisians 5, Black forest fowls 5, Lincolnshire Buffs 4, Dumpties 3, Langshans and Minorcas 3, Bearded Thuringians, Westphalians, Suabians, Andalusians, Dominiques, Winsen fattening breed, Hanau layers, Naked Necks, La flèche, silver Braekel, black Spanish, light Brahma and Cochins with one station each, in all 35 breeds, mostly of the laying type, which quality is considered more important than flesh production.

In allotting the above-mentioned breeds to the various districts, local requirements and traditions—finding expression in many of the names just given—have received every attention at the hands of the authorities. In order to prevent “scattering” of forces and to preserve local character it has further been deemed advisable to limit the number of breeds as much as possible in each case, despite the protest raised in many quarters against this well-intentioned measure owing to the hardships it imposes upon poultry-keepers who favour breeds not officially recognised in the district. A farmer in Eastern Prussia for instance, where leghorns of all varieties are basking in the sunshine of governmental protection—will upon removal across the boundary into Western Prussia suddenly discover that only one variety—the brown—is recognised by the authorities, whilst all others are cold shoultered and excluded from competition for Government prizes at Agricultural Shows! The recent case of the Ramelsloher furnishes another instance of unappreciated official interference. This famous old German breed has suddenly been struck off the list in at least two Prussian provinces—Brandenburg and Rhenish Prussia—owing to complaints of being “over exhibited” and thereby “losing its utilitarian qualities.” In the first named district white Orpingtons have been substituted, while in the second “black Rhinelanders”—near relatives to black rose-combed Minorcas and excellent layers, as proved by their exploits at the Rhenish laying competitions—have come into their own. This action on part of the Agricultural Chambers has been much criticised and condemned as “unpatriotic” by the whole of the Ramelsloher fancy—whilst on the other side jubilation is rampant in the camps of the white Orpingtonites and the black Rhinelanders! *Que voulez vous?* It is impossible to satisfy everybody. Some must laugh and some must weep—it is thus decreed in the ordering of our lives!

Reverting to the list of breeding stations as existing in 1906 we find that Pekin ducks were kept at 317, Indian runners at 76, Rouens at 25, Aylesburys at 9, Cayugas and “Turkish” ducks each at 1 of these establishments, whilst geese rank

as follows: Embdens 150, Pommieranians 82, Italians 8, Toulouse 7, Diepholzer 3, Native Cross 2, North Lausitzer 1, and Turkeys: Bronze 17, white 6 stations.

As a rule the breeding pen consists in the case of fowls of one cock and ten hens, waterfowls: one drake and four ducks, or one gander and three geese. These stations are in private hands, the manager undertaking to keep the strain pure, to hatch a number of chickens for future use as stock birds, and to sell eggs not required by him for sitting and surplus stock at prices fixed by the authorities who supply the breeding pen and necessary implements for the use of the station under an agreement facilitating the ultimate acquisition by the manager. By means of these breeding stations, dotted all over the country and especially numerous in the western portions of the empire, an enormous utilitarian influence has been exercised, mongrelism, once rampant in most parts has given place to greater uniformity of type, and quality of produce shows everywhere a marked improvement. In addition to the teaching centres and breeding stations there have also been established over 300 model poultry yards for the purpose of giving instruction and encouragement, and to aid in the diffusion of tested laying strains. The question of “fattening stations” is under consideration; hitherto such establishments have only come into existence as the result of private enterprise, and they have had many difficulties to contend with, principally through the dearth of local “raw material.” In this direction much yet remains to be done, but we must not be impatient. Better to solve the egg problem first, and let flesh production stand over for a while until the public taste, turning more and more in that direction will create a really active and regular demand for table poultry.

Allusion has already been made to the granting of Government prizes for utility poultry at agricultural shows and to the heart burnings caused in certain quarters by the strict adherence on the part of the authorities to the rule originally laid down with regard to eligible breeds. In Eastern Prussia the following are officially recognised: Leghorns (all varieties), Ramelsloher, Orpingtons, Plymouth Rocks, Malines; in Western Prussia: brown Leghorns, black Minorcas, barred Plymouth Rocks (no others); in Brandenburg: Leghorns, Minorcas, Hamburgs, Ramelsloher, Wyandottes, Orpingtons, Langshans, Malines, Sundheimer, and Faverolles; in Pommerania: brown Leghorns, black Minorcas, white Wyandottes, and Coucou de Malines, which few examples sufficiently demonstrate the widely differing official conceptions of utility poultrydom. One of the conditions attached to the granting of Government prizes in Prussia is that the exhibitions must not be held during the hatching season, to wit: between March 15th and May 31st. For most provinces premiums ranging from M.50 (£2 10s.) to M.200 (£10) are also awarded to best kept poultry yards, generally with the proviso that such sums be spent upon improvements and extensions.

MODERN SCIENCE AND POULTRY PROBLEMS.

By OSCAR SMART.

II. VARIATION IN "PURE-LINES."

PROFESSOR Johannsen, of Copenhagen, has made some rather interesting experiments in respect to the seeds of beans, which are worthy of consideration when studying the inheritance of specific characters within pure-lines. Taking the pods when ripe from a single plant he collected the seeds and weighed them, separating them into two groups—large seeds and small seeds. These he sowed in his garden. Now the bean, like the pea, is a self-fertilizing plant; so that Johannsen could rely on both the large and the small seed character being fertilized respectively by their own pollen. He was therefore entitled to consider both the large and the small pure-lines in respect to large or small seeds. He again collected and weighed the seed from each kind of plant, and found to his surprise that the seeds from each were alike in regard to variations of weight; there was, in consequence, no appreciable inheritance of size.

It would appear therefore that large seed \times large seed does not breed more large seed progeny than does small seed \times small seed—as will be admitted a somewhat discouraging conclusion. But there is another factor to take into consideration—the variants from these two matings may have represented fluctuating and not genetical differences.

The causes of fluctuation are many, and become varied when applied to different characters, some of which we must deal with in the present paper. We may assume, in the case of Johannsen's beans, that fluctuation played a very important part in the unexpected nature of his results. The soil is known to have a very important affect on the size of seeds; changes in the weather also have to be considered. If then the progeny from the large \times large carry largeness as a pure genetic factor, and the progeny from the small \times small carry smallness as a pure genetic factor, the similarity of the results obtained from each must be attributed to fluctuating variation brought about in part by the soil, favouring a common development, and in part by climatic conditions.

This may be assumed to be the actual cause of the apparent non-inheritance of size in Johannsen's bean seeds which descended in a pure line. We may affirm that a pure line breeds true to its specific characteristic, but

that a large amount of variation within the pure line must be accounted for by the tendency to fluctuation due to environment and other causes.

Bearing these facts in mind, we may now enquire into what is meant by a "pure line" in fowls and what are the causes of the fluctuation which is known to occur in respect to many characteristics.

PURE LINES IN FOWLS.

A "pure line" has to be distinguished from a "pure character," for the two are not synonymous terms. If you cross a rose with a single comb *all* the progeny have rose combs, and just half of the offspring of such a cross is immediately pure to the rose comb character. But a pure line can neither be made so easily nor so quickly—in fact there are many who doubt whether a pure line can be made in fowls, which have to depend on sexual fertilization to reproduce their kind. It is maintained that no two animals are *exactly* alike in every detail of composition, and that the offspring of sexual union cannot therefore be represented, however closely bred, as conforming to the requirements of what Johannsen meant by a pure line

From a strictly academical point of view this contention is of course correct, as self-fertilization is essential to ensure absolute purity of line; but from a practical point of view, in poultry breeding at any rate, such narrow restrictions are not necessary. We shall, therefore, regard a pure line in fowls as a strain breeding *fairly* true to at least one specific character. We may, then, have lines pure for type, for colour, for markings, for heavy fecundity, for egg colouration, etc., and may now proceed to the consideration of the causes of fluctuation within such pure lines.

FLUCTUATIONS IN FOWLS.

Structural and organic characters seldom fluctuate to any appreciable extent, this kind of variation being associated with the minor or non-essential characters. Even in these, however, there are many degrees of fluctuation, baffling all known means of adequate classification. We can see this very clearly in respect to the inheritance of colour. White may be said to exhibit less fluctuation than does buff, but even the fluctuation in white is subjected

to some kind of sub-division, the white of the white Leghorn presenting fewer fluctuations than does, for instance, the white of the white Orpington.

In view of this want of power to classify fluctuating differences in fowls, it is advisable to instance a few cases and to treat each individually.

BUFF FLUCTUATIONS.

It has long been found impossible to breed a flock of buff fowls of uniform colour throughout, both the "lemon" and "gold" shades being particularly difficult to obtain in any great numbers. Birds too light and birds too dark in colour are the rule; the ideal shade of buff is only to be found as an exception here and there among a flock. Selective breeding

ever varying ratio one to the other. The fluctuation in buff colour is therefore due to the inter-changeable nature of red and yellow, and represents the varying ratios in which these are inherited one to the other.

WHITE FLUCTUATIONS.

Of white fluctuations there are, so far as I can discover, two kinds: (1) a tendency to "sappiness" or a cream tint, sometimes developing into a positive yellow colour, and (2) the tendency to show "ticks" or coloured feathers in different parts of the plumage. These two forms of fluctuation may be, and frequently are, found in the same bird, but they are more commonly found apart. In either case they are *not* due to the same cause, and must, in consequence, be considered separately



An Excellent Type of Portable House.

[Copyright.]

within the pure line, the yearly inter-mating of ideally coloured birds, fails to effect any very great improvement. The accumulated result of generations of selected stock never yet, and never will, cause the "gold" colour to be inherited with any degree of constancy. Why is this?

There are some colours known as "composite" colours; these are not, strictly speaking, pure, being an admixture of two or more colours. The buff of fowls is of this order, it being a composite of brownish-red and yellow. Between these primary colours there is only a partial kind of segregation which allows the two to be inherited in individual birds in an

(1) In breeding for wealth of feathers, as in the Asiatics, one obtains plumage shewing a much higher percentage of moisture than is to be found, for example, in the closely feathered Mediterranean breeds. The excessive moisture, acting on the lime of which the feather is chiefly composed, gives the plumage that creamish tint which we describe as "sappy." The whiter birds are those whose feathers contain a relatively lower percentage of moisture, due, no doubt, to them being able to dispose of the excess at the time when the growing feather casts its sheath. It is impossible to entirely do away with this tendency to "sappiness" in a breed where wealth of feather

is deemed of some importance. That the fluctuating nature of sappiness is correlated to the varying degrees of moisture to be found in the feather is proved by the short breast feathers, which contain less moisture than any other part of the plumage, being relatively whiter,

(2) Of whiteness in fowls there are several kinds, which we shall deal with in our articles on Mendelism; here we need only call attention to two as both, through two distinct causes, throw progeny exhibiting a certain amount of "ticking."

So far as I can discover, and my enquiries have been fairly wide, there are no true albinos in fowls, for all shew traces of pigment (more especially in the eyes) when carefully examined. The whiteness of the white varieties must therefore be due to either one of two causes. It may be due to a white factor acting as a simple dominant, thus suppressing the development of colour, or, on the other hand, it may be due to the presence of all the factors necessary for the development of colour except one, so that, in the absence of the developing colour factor, the bird is of course white. I shall prove in a later article that both kinds of white plumage exist. Here it is only necessary to point out that although both kinds of white plumage shew a certain amount of ticking, this ticking is much commoner in the recessive than in the dominant whites. In the former case it is caused by a perfectly ineffectual effort on the part of certain factors to develop colour; in the latter case it is caused by the incompleteness of the suppressing factor.

(To be continued).

UTILITY POULTRY CLUB.

Twelve Months Laying Competition 1912-13.

The Report of the Twelve Months Laying Competition which was held at the Harper Adams Agricultural College, Newport, Salop, under the management of Mr. F. W. Rhodes has now been issued.

The Club's Gold Medals and First Class Certificates have been awarded to the following pens.

GOLD MEDALS AND 1ST CLASS CERTIFICATES.

PEN.

- 60 Miss. M. C. Watts, Hoar Cross, Burton-on-Trent. White Wyandottes.
- 32 Mr. E. Cam, Glen Poultry Farm, Hoghton, Preston. White Wyandottes.
- 29 Miss E. Barron, High Springs House, Catforth. White Wyandottes.
- 35 Mr. H. S. Hodgkinson, Eversley, Freshfield, Liverpool. White Wyandottes.
- 45 Mr. F. Toulmin, Esprick, Kirkham, Lancs. White Wyandottes.
- 11 Mr. E. Cam, Glen Poultry Farm, Hoghton, Preston. White Leghorns.

SILVER MEDALS AND 1ST CLASS CERTIFICATES.

- 24 Mr. T. P. Rawcliffe, Poultry Farm, St. Michaels-on-Wyre. Black Leghorns.
- 22 Mr. N. Hunt, Ledwyche Orchard, Tenbury, Worcester. White Leghorns.
- 53 Mr. S. Shepherd, Vine Cottage, Holmes Chapel, Cheshire. White Wyandottes.
- 52 Miss M. C. Watts, Hoar Cross, Burton-on-Trent. White Wyandottes.
- 54 Mrs. A. L. Mason, Clements Road, Yardley, Birmingham. White Wyandottes.
- 7 Mr. T. Barron, Catforth, Preston. White Leghorns.

1ST CLASS CERTIFICATES.

- 86 Mr. H. Sutton, Moss Hall, Little Hoole, Preston. Buff Rocks.
- 20 Mr. A. J. Saunders, Filton Hill Farm, Filton. White Leghorns.
- 95 Mr. C. S. Young, White House, Sunbridge, Kent. Rhode Island Reds.

SILVER MEDALS AND 2ND CLASS CERTIFICATES.

- 80 Mr. W. Reynolds, Leigh Nook, Street, Somerset. Buff Orpingtons.
- 10 Mr. D. Kennedy, Loddington, Leicester. White Leghorns.
- 40 Miss M. H. Knowles, Stockton House, Codford.

BRONZE MEDALS AND 2ND CLASS CERTIFICATES.

- 31 Mrs. Goodwin Preece, Crosshill House, Shrewsbury. White Wyandottes.
- 91 Mrs. G. Neal, Hillside, Kingsdon, Taunton. Salmon Faverolles.
- 68 Mr. G. H. Caple, Stanton Prior, Bristol. Black la Bresse.
- 51 Miss M. Fowler, Park Lodge, Foniscowles, Blackburn. White Wyandottes.
- 27 Mr. R. Halliday, Hillside House, Kings Langley. Silver Campines.

2ND CLASS CERTIFICATES.

- 4 Mr. G. H. Whitley, Simm Carr Farm, Shobden, Halifax.
- 49 Mr. R. Dixon, Tardebigge, Bromsgrove.

The awards made by the different Specialist Clubs are as follows:—

BUFF ROCK CLUB.

- 86 Mr. H. Sutton, Moss Hall Farm, Little Hoole, Preston. £1.
- 90 Mr. A. H. Stevens, New Hall, Purleigh, Malden, Essex. 10s.
- 85 Miss M. H. Knowles, Stockton House, Codford, St. Mary, Wilts. 5s.

BUFF LEGHORN CLUB.

- 11 Mr. E. Cam, Glen Poultry Farm, Hoghton, Preston. Silver Medal.

ANCONA CLUB.

- 4 Mr. G. H. Whitley, Simm Carr Farm, Shobden, Halifax. £1 1s.

SUSSEX CLUB.

- 100 Miss Prideaux, The Pines, Flitwick, Beds. Silver Medal.

LA BRESSE CLUB.

- 68 Mr. C. H. Caple, Manor Farm, Stanton Prior, Bristol. 7s. 6d.

NORTHERN UTILITY POULTRY SOCIETY.

- (a) 60 Miss M. C. Watts, Hoar Cross, Burton-on-Trent. £1.
- (b) 22 Mr. N. Hunt, Ledwyche Orchard, Tenbury, Worcester. £1.
- (a) Sitting variety laying greatest number of first grade eggs.

(b) Non-sitting variety laying greatest number of first grade eggs.

One hundred pens of six pullets each were entered and represented numerous pure breeds of various strains, the birds were competing for prizes awarded for the largest money value of eggs laid during the period of twelve months.

The money value was ascertained by taking the average price per dozen for the three leading markets at London, Bristol, and Wolverhampton as per the Board of Agriculture returns for 1911.

The test clearly shows the importance of strain in regard to egg production, since amongst the best and the worst pens were to be found birds of the same breed.

Eggs.

The total number of eggs laid was 91115. This gives an average per bird of 151.9 eggs. The largest number of eggs laid by one pen of six birds was 1389 which gives an average per bird of 231.5 eggs, and the largest number of eggs laid by one bird was 275.

All the birds were trap-nested so that records could be kept of the actual number and size of all eggs laid by each of the six hundred birds.

Feeding.

The method of feeding adopted was to give grain food in the scratching sheds in the morning and the wet warm mash in the afternoon.

The figures show that it required 5.4 lbs. of dry food to produce one pound of eggs at an average value of 9.6 pence. The cost of the food being 5.6 pence per pound. This shows a profit over food of 4 pence per lb. of eggs.

It was also found that those birds which lay well during the autumn months, on the average all prove good layers on the whole year.

Eggs weighing 20zs. and over are valued at the full market price. Those under 20zs. but weighing 1½ozs. and over at 15% less than market price, and those under 1½ozs. are considered valueless.

A comparison of the returns obtainable from nine acre of grass land used entirely for poultry and the same area used for milk production shows that a much larger return is obtainable from the poultry than from the cattle.

When Eggs were cheap.

Froude, in his "History of Queen Elizabeth's reign," records how that "A priest in Edinburgh, taking courage from the reports which were in the air, said mass at Easter at a private house. He was denounced, caught, hurried before the town magistrates, and having confessed, was fastened hand and foot to the Market Cross. There from two o'clock in the afternoon till six he stood exposed, while 'ten thousand eggs' were broken upon his head and body."

Travelling Poultry School.

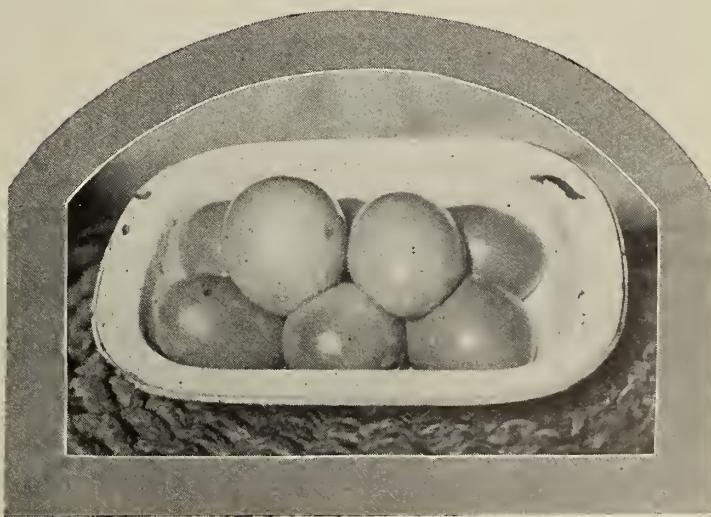
We understand that the Devon County Agricultural Committee have approved a proposal to form a travelling poultry school in that county, by means of which practical teaching in this subject can be given in the different centres.

EGG PRODUCTION FOR PROFIT.

The time for discussing whether utility poultry-keeping can be made to pay or not is past, for the concensus of opinion is that money can be made from laying hens. The main question to-day is relative to the merit of the various systems advocated, and moreover, the limitations of the industry as a whole.

We have received a very interesting communication from Mr. William Shead, Oceana Poultry Farm, Carterton, Oxon, giving his experience of the past ten months working an area of ground rather less than a quarter of an acre. Beginning with 46 pullets twelve months ago, in forty-three weeks 6,711 eggs were laid up to the 18th October, 1913. This is an average of 146 eggs per bird. The reason why details are given only for 10 months is that on the date mentioned 27 of the birds were sold, but at the same time it must be mentioned that a number of the remaining 19 hens were still laying. Eggs were sold to a value of £21 19s. 3d., and consumed at home to a value of £2 1s. od. The 27 hens sold realised £2 os. od. and the sale of 10 cockerels brought in 17/6. No charge was made for labour, as is right under these circumstances, the only expense being for food which cost £16 10s. od. In addition to the remaining hens there were 71 well-grown chickens at the end of October, which may without exaggeration be valued at 1/- each or £3 11s. od. for the total number. This leaves a profit of £13 18s. 9d. on the ten month's working.

Mr. Shead has now set himself to see how much food he can produce upon the ground at his disposal, without interfering in anyway with the birds on the land. Although only working in a small way, Mr. Shead has proved to himself that fowls will make ample reward if proper attention and thought are given to them.

**Eggs Abnormal.**

The photographs which we reproduce represents not less than eight eggs—soft shells, slightly yellow in colour—which were found in the oviduct of a Buff Orpington hen. Each egg weighed over 4oz. The hen stopped laying and began to swell behind and the operation performed by the owner—Mr. C. M. de Launey—determined the cause.

TABLE OF PRICES REALISED FOR HOME, COLONIAL, AND FOREIGN POULTRY, GAME, AND EGGS FOR THE FOUR WEEKS ENDING MARCH 14th, 1914.

ENGLISH POULTRY—LONDON MARKETS.

DESCRIPTION.	1st Week.	2nd Week.	3rd Week.	4th Week.	COUNTRIES OF ORIGIN.				PRICES REALIZED DURING THE MONTH.			
	Each	Each.	Each.	Each.	CHICKENS. Each.	DUCKS. Each.	DUCKLINGS. Each.	GEESES. Per lb.	TURKEYS. Per lb.			
Surrey Chickens	3/3 to 4/6	3/6 to 4/6	3/6 to 4/6	3/6 to 4/6	Russia	1b.	—	—	—	—	—	—
Sussex	3/3 „	4/6 „	3/6 „	4/6 „	Belgium	3/6 „	4/6 „	—	—	—	—	—
Boston	2/3 „	3/6 „	2/6 „	3/9 „	France	2/6 „	3/6 „	—	—	—	—	—
Essex	„	„	2/6 „	4/0 „	United States of America	„	3/9 „	—	—	—	—	—
Capons	5/0 „	6/0 „	5/0 „	6/0 „	Austria	6/0 „	5/0 „	—	—	—	—	—
Irish Chickens	2/0 „	3/6 „	2/0 „	3/6 „	Canada	2/0 „	3/6 „	—	—	—	—	—
Live Hens	1/9 „	3/0 „	2/0 „	3/0 „	Australia	2/0 „	3/0 „	—	—	—	—	—
Aylesbury Ducklings	3/0 „	5/0 „	4/6 „	6/0 „	—	—	—	—	—	—	—	—
Ducks	—	—	—	—	—	—	—	—	—	—	—	—
Goslings	—	—	—	—	—	—	—	—	—	—	—	—
Turkeys	1/0 „	1/0 „	1/0 „	1/0 „	—	—	—	—	—	—	—	—
Guinea Fowls	2/9 „	3/6 „	2/9 „	3/6 „	—	—	—	—	—	—	—	—

ENGLISH GAME—LONDON MARKETS.

DESCRIPTION.	Each.	Each.	Each.	Each.	COUNTRIES OF ORIGIN.				DECLARED VALUES.			
	Each.	Each.	Each.	Each.	Black Game	Blk Game	Partridge	Game.	Game.	Game.	Game.	Game.
Grouse	—	—	—	—	—	—	—	£41,543	£41,543	£41,543	£41,543	£41,543
Partridges	—	—	—	—	—	—	—	—	—	—	—	—
Pheasants	—	—	—	—	—	—	—	—	—	—	—	—
Black Game	1/6 „	1/4 „	1/6 „	1/4 „	1/6 „	1/4 „	1/6 „	—	—	—	—	—
Hares	2/3 „	2/9 „	2/6 „	3/0 „	2/6 „	3/0 „	2/6 „	1/4 „	1/6	1/4 „	1/6	1/4 „
Rabbits, Tame	1/0 „	2/0 „	1/0 „	2/0 „	1/0 „	2/0 „	1/0 „	2/0 „	2/3 „	2/0 „	2/0 „	2/0 „
„ Wild	1/6 „	1/9 „	1/6 „	1/9 „	1/6 „	1/9 „	1/6 „	1/9 „	1/9 „	1/6 „	1/9 „	1/9 „
Pigeons, Tame	—	—	—	—	—	—	—	—	—	—	—	—
Wild Duck	1/9 „	2/3 „	1/9 „	2/3 „	2/0 „	2/6 „	2/0 „	2/6 „	2/6 „	2/0 „	2/0 „	2/0 „
Hazel Hens	1/0 „	1/2 „	1/1 „	1/1 „	1/0 „	1/0 „	1/0 „	1/0 „	1/0 „	1/0 „	1/0 „	1/0 „
Woodcock	1/6 „	2/6 „	2/0 „	2/6 „	2/0 „	2/6 „	2/0 „	2/6 „	2/6 „	2/0 „	2/0 „	2/0 „
Snipe	9/9 „	1/6 „	9/9 „	1/3 „	9/9 „	1/3 „	9/9 „	1/3 „	1/3 „	9/9 „	1/3 „	1/3 „
Plover	1/0 „	1/3 „	1/1 „	1/3 „	1/0 „	1/9 „	1/0 „	1/9 „	1/0 „	1/9 „	1/0 „	1/2 „

ENGLISH EGGS (Guaranteed New-Laid).

MARKETS.	Per 120.	Per 120.	Per 120.	Per 120.	DESCRIPTION.				DESCRIPTION.			
	Per 120.	Per 120.	Per 120.	Per 120.	French	Danish	Italian	Austrian	Russian	Per 120.	Per 120.	Per 120.
LONDON	12/-	14/-	12/-	14/-	9/-	9/-	9/-	9/-	9/-	14/-	13/9	13/9
Provinces,					Eggs per dozen.	Eggs per dozen.	Eggs per dozen.	Eggs per dozen.	Eggs per dozen.	14/-	12/6	12/6
CARLISLE	1/4	1/4	1/5	1/5	1/2	1/2	1/2	1/2	1/2	7/0	6/6	5/6
NEWPORT					8/0	8/0	8/0	8/0	8/0	7/0	6/0	6/0

FOREIGN POULTRY—LONDON MARKETS.

COUNTRIES OF ORIGIN.	IMPORTS OF DEAD POULTRY & GAME.				COUNTRIES OF ORIGIN.	IMPORTS OF EGGS.			
	MONTH ENDING FEBRUARY 28, 1914.					MONTH ENDING FEBRUARY 28, 1914.			
Russia	—	—	—	—	Russia	—	—	—	—
France	—	—	—	—	France	—	—	—	—
Austria-Hungary	—	—	—	—	Austria-Hungary	—	—	—	—
United States of America	—	—	—	—	United States of America	—	—	—	—
Other Countries	—	—	—	—	Other Countries	—	—	—	—
Totals	£202,775	£202,775	£202,775	£202,775	Totals	£108,718	£108,718	£108,718	£108,718
	180,220	180,220	180,220	180,220	Denmark	£113,830	£113,830	£113,830	£113,830
	54,360	54,360	54,360	54,360	Germany	£26,150	£26,150	£26,150	£26,150
	106,908	106,908	106,908	106,908	Netherlands	£55,792	£55,792	£55,792	£55,792
	60,552	60,552	60,552	60,552	France	£37,582	£37,582	£37,582	£37,582
	128,500	128,500	128,500	128,500	Italy	£74,382	£74,382	£74,382	£74,382
	84,156	84,156	84,156	84,156	Aust.-Hungary	£41,263	£41,263	£41,263	£41,263
	346,530	346,530	346,530	346,530	Other countries	£131,067	£131,067	£131,067	£131,067
	Totals	Totals	Totals	Totals	Totals	£1,069,944	£1,069,944	£1,069,944	£1,069,944

FRENCH FATTENING.

CAPONS AND POULARDES.

Of late there have been doubts thrown upon the statement that caponising is practised to any extent in France, and we have made special inquiries as to this point. The result is that whilst it cannot be said that caponising is at all universal, there can be no question that it is widely adopted, and all the best specimens are so treated. During certain periods of the year women travel about the Bresse district from farm to farm, performing the operation at a given price per bird. An ordinary fowl will sell for six or seven francs (we are now speaking of the poultry districts, such as Louhans, Bourg, &c.), but a capon will realise ten, twelve, and up to twenty francs, according to its size and flesh. Even when a capon is not more than one-fourth greater in weight than a cockerel it will sell for more than twice the amount. A capon which we saw at the Bourg Show a few days before Christmas weighed nearly twelve pounds. These birds grow to a larger size than cockerels, but at the same time the flesh is regarded as much finer and more delicate. Poularesses are only so in name, as there has been no operation interfering with the ovaries. Care is taken to keep them from laying, and their flesh is the finest of all. A poularesse will always command a higher price than a capon, even though the latter be greater in weight. That caponising is essential to produce the finest specimens of table poultry cannot be questioned, and to the same extent as in France its adoption should be advocated.

METHODS OF FEEDING.

Very little change has been made in French methods of producing table poultry within the last thirty years, and practically no progress has been made. At one time we looked to our neighbours across the Channel for the best methods and for the finest specimens, but that is no longer the case. Although very fine birds are placed upon the great markets, we do not think that they are equal to what were common at one time. The reasons for this are not easily discerned, but there is a tendency in all races of poultry to lose their virility, and in some of the French breeds this is probably the case. So far as we are aware only one new breed has been introduced during recent years, the Faverolle, and that is not a first-class table fowl. The natural conservatism of the French peasantry, and their indisposition to change, has made them less disposed to the adoption of new methods.

FOOD EMPLOYED.

In some establishments where liquid food is used a mixing machine is employed for its proper preparation. In the Bresse country buckwheat and maize-meals are largely employed for fattening, whilst in Normandy, barley-meal is regarded with favour. At the Roullier-Arnoult establishment, near Houdan (Seine-et-Oise), the food for fattening

consists of the barley-meal, thoroughly sifted, sometimes varied by fine Indian-meal, and mixed with skim milk, or the whey of curdled milk as a change. The mixture is made into a thick cream, and during the last three days of the process an ounce of diluted fat is added for every three birds, or a raw egg to every pint of the liquid used. The birds fed in this manner sell for two francs per pound.

A FOUR-LEGGED INCUBATOR.

A certain innkeeper, whose name and address are given, possessed some hens which were in the habit of laying eggs in a box which was subsequently utilised as a kennel for his dog. The latter did not object to the old occupants of the abode still utilising it for business purposes, whilst the hens on their part displayed no sort of diffidence as regards laying in the presence of the tyke. The innkeeper, as the third contracting party, heartily approved of the arrangement, as it saved him going to the expense of providing a new nesting-place for the birds, and so all went on merrily, the eggs being collected daily as before. A sudden change, however, is stated to have come over the scene one fine morning, as the dog was noticed to vacate his sleeping quarters in a hurry at a very early hour whilst the hens were visibly exercised in their minds. Investigation followed, as a natural sequence, when it was found that a chicken had been hatched from an egg which must have been overlooked and left in a corner, the heat of the dog's body supplying the natural warmth—according, that is to say, to the theory of the innkeeper, who has doubtless added to the attractions of his establishment by the excitement the affair has caused in the neighbourhood. At the time of writing, report says that it has not yet been decided whether the dog is the mother of the chicken or not.—*Petit Parisien*.

DRUNKEN DUCKS.

The advocates of "temperance," as they oddly call it, often contrast the convivial habits of man with the asceticism of the lower animals. But don't animals get drunk? The following case of intemperance in birds occurred under my own eyes, and under the bridge over the Lochy, below the Ben Nevis Long John Distillery. That establishment disgorges into a burn a quantity of refuse, no doubt alcoholic. When we crossed the bridge in the morning to fish, the ducks from the farm opposite were behaving in a drunk and disorderly manner—flying, beating the water, diving, spluttering, and greedily devouring the stuff from the distillery. Their antics were funny, but vulgar. By two o'clock we found the ducks sleeping off the effects of their debauch. We wakened them, and they all staggered eagerly to a bucket of water, from which they quenched the torments of thirst. A small seabird behaved in a still more deplorable way. He slowly drifted down the Lochy from the fatal intoxicated burn, nor could pebbles judiciously

thrown at him induce him to take the wing. He tried to dive, making efforts comic and unsuccessful. After drifting through the bridge, I regret to say, he returned to the burn and "took a cup of kindness yet," getting all the more intoxicated, and drifting back in a yet more deplorable condition. What lesson, we said, is this to mankind, who after all need not speak of their boasted reasonableness! The wild and tame things of stream and ocean are as unwise as we." MR. ANDREW LANG, in *Longman's Magazine*.

BERWICK EGGS.

A GLIMPSE INTO THE EIGHTEENTH CENTURY.

The recent case in which it was proved that eggs sold as Irish were continental, recalls the egg trade of Berwick more than a century ago. Doubtless the eggs bought and sold in Berwick to-day are like the eggs that can be had in Newcastle, at Hexham, Morpeth, and Alnwick; that is, some of them are country eggs (home produce) and others are box eggs from Germany, Austria, Russia, or elsewhere. Berwick did a big trade in eggs one hundred and twenty years ago. The "Good Town" did not import eggs, but it did a big transport trade in them. They were collected by eggliers from every part of Tweeddale, and by them conveyed to the town in carts, or on panniers on pack horses. These eggs were gathered in great numbers in the Vales that spread themselves out from Harwick and Selkirk. Berwick grocers profited by the trade, for the eggliers bought supplies from them, to take back to their customers in the country. During the years 1791-2-3 and 4, the average number of chests of eggs shipped yearly from Berwick to London was 4,000, and on an average, the annual value of the eggs turned over in the town was estimated at £20,000. In 1798, no fewer than 5,254 chests of eggs were sent to London, and according to the season of the year the prices varied from 5d. to 1s. per dozen.—*Newcastle Chronicle*.

A SIMPLE METHOD OF PRESERVING EGGS.

DR. N. HANIKA, of Landwirth Wich, Bavaria, says that he has found in the pores or even newly laid eggs micro-organisms which cause decomposition, and that as it is evident from this that methods of preservation which aim only at the exclusion of the atmosphere must consequently be useless, he proposes in place of the various processes now in use the following novel method—one which he says attains the desired end completely. The egg to be preserved, which should be as fresh as possible, must be examined closely by tapping and otherwise to guard against cracks or break in shell. They are then laid in water of about 95 (ninety-five) degrees Fahrenheit or 35 degrees Centigrade for about 15 (fifteen) minutes or until they are well warm throughout. Every particle of dirt should be removed from the shell by wiping with a sponge wet with warm water. The eggs are then put in suitable quantities on a sieve net or loosely woven

basket held for five seconds in boiling water and removed thence as quickly as possible into cold water. The eggs, still wet, are laid on a clean cloth and let dry off spontaneously by exposure to the atmosphere; under no circumstances should they be dried off with a cloth or towel. As soon as they are quite dry they are packed in a box with either ground peat, sifted wood ash, wheat chaff, wood wool, or wheat bran; the packing material to be made thoroughly dry by heating before using. The hands of the packer should be well scrubbed, before going at the work, with soap and hot water, a brush being used to make sure of cleanliness. The boxes should be stored in a cool dry place out of the reach of frost. Eggs thus preserved in June and July were found to absolutely and perfectly fresh the next February and March (a period of nine months), no deterioration in taste, odour or general appearance being detectable. The philosophy of the process is simple and easily understood. The five second's dip in boiling water was sufficient, not merely to kill the microbes in the shell substance and between it and the inner skin, but to cause the coagulation of a thin but all-sufficient skin of albumen lying next to the skin, and thus forming an impossible barrier to the exit of water and entrance of air with its microbe of decay.—*Lennox's Trade Journal*.

DOCTORED POULTRY FLESH.

Last week I purchased from a man, with whom I had often previously dealt, a pair of fowls for roasting, properly drawn, trussed, and prepared for the kitchen. They were very good, of a fair size, and plump birds. We had them roasted last Saturday for cold dinner on Sunday. On cutting one of them for a slice out of the breast, and afterwards to sever the wing, I observed there was—apparently mixed with the white meat of the breast—a brown substance like forcemeat, or liver, streaking the meat. My family ate it with some ham, and we all remarked it was somewhat strange and dry eating. I afterwards cut the other fowl, and then discovered that the whole of the white flesh had been cut and abstracted clean from the breast-bone, close down to the pinion and merrythought, and the space filled up with two pieces of roasted lean pork. The skin of the breast had been cleverly cut and brought back—either from the point of the breast, near the tail, to the neck, or *vice versa*—and the space filled up and beautifully rounded, and the fowl looked more than ordinarily plump and attractive. I am a very good carver, and could not be deceived after cutting into it. I have, therefore, felt sure that the fowls had had their white meat taken from them to make a *suprême de volaille*, or other expensive *entree*, and instead of the frame of the bird being thrown into the stock pot, was reserved and sold, perhaps, at about 9d., and beautifully doctored—at a cost of another 3d.—and then sold to me at half-a-crown. This is so ingenious a plan, and was so cleverly done, that an old soldier like myself has been thoroughly taken in.—J. K. FOWLER, in *The Stock-keeper*.



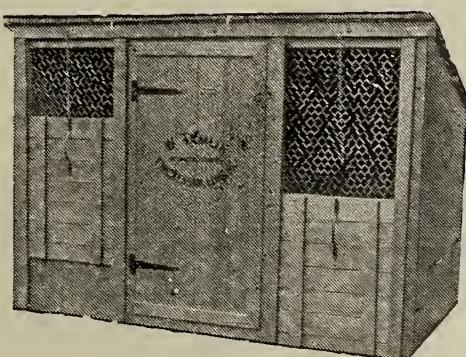
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Poultry Appliance Manufacturer
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The Poultry Industry in Western Australia.

The following is an interesting extract from the annual report of the Western Australian Government poultry expert:—

"The year ending June 30th last has been marked by many definite signs of progress. On all hands there is evidence of a better understanding as regards the importance and possibilities of this industry. Each year sees a great increase in this State's production of eggs and table poultry. Not only are our old established poultry farmers increasing their plants and stock, but many others are embarking on the undertaking, and it is pleasing to be able to state that they are nearly all doing well. The imports of poultry and eggs for the past year amounted only to £32,000. This is considerably less than for any previous year, and must be regarded as very satisfactory when the increase in the population of the State is taken into account. Eggs and poultry have continued to maintain excellent prices. Eggs, however, did not bring such extraordinary high prices (in the very dear season) as in former years, but the general average has been much higher. This may be accounted for by the fact that greater use is being made of cool stores. The market for table poultry has been good, and high prices have been maintained. There is almost an unlimited demand for good table birds at high rates, and one that is not likely to be overtaken for some years to come. It is this branch of the industry that I have strongly urged poultry keepers to take up, and many of them have acted on that advice with satisfactory results."

Mr. Tamlin's Exports.

The following is a list of Mr. W. Tamlin's Exports for February, 1914. Eight 100 foster mothers and twelve 100 and twelve 200 incubators to Mons Lebaron, Maronne, France; forty 100 incubators to Fletcher Bradley, agent for Canada; one 30 incubator to Pernambuco, South America, order of Gunton, Sons & Co., Liverpool; three 30, six 60 and six 100 incubators, six 60 Sunbeam rearers, to Salisbury, Rhodesia, Messrs. A. F. Phillips & Co.; six 60, also nine 100 and six 30 incubators to Hayward Young & Co., agents for Port Elizabeth; one 60 incubator to H. Stensson, Ontario, Canada; three 100 and six 60 incubators, six 100 and six 60 foster mothers, to Woodhead, Plant & Co., agents for Cape Town; twenty 100 and ten 60 incubators and ten 100 foster mothers to Mons. A. Masson, sole agent for France; fifteen 100 incubators and six 100 foster mothers to G. Barelli, agent for Italy; six 100 and six 60 incubators, and six 60 foster mothers to Mr. Ed. Baron, agent for Switzerland.

A successful Egg Preservative.

No one expects to be able to hold over eggs for six months or longer and to maintain all the special and peculiar characteristics of "new laid," but that eggs can be kept in good condition for a considerable period is true. One of the best proprietary preservatives on the market to-day, is that manufactured by Messrs. Keeps, Ltd., and the results that have been obtained by practically all of the users of this material appear to be excellent. In all cases of preservation the strength of shell and the freshness of the egg are of great importance. The new directions issued by this firm are complete and should, if followed out, minimise risk of failure.

U.S. Eggs for Canada.

The importation of United States eggs into Canada during the spring months has shown a marked increase, and it is even stated that if Montreal were not liberally supplied from Ontario and Chicago, it would be practically eggless. For an Agricultural province like Quebec this question of a deficient home supply of eggs is one deserving attention. Chicago eggs are now pouring into Quebec in spite of a three cent per dozen duty.

Agricultural Organisation Society.

Mr. A. D. Allen, who has been for some years lecturer on poultry to the Wilts County Council, is the new poultry expert to the Agricultural Organisation Society. Those, who like ourselves, know the excellent work done by Mr. Allen in Wilts, will join in congratulating him upon his new position, and wish him success in the work he has undertaken, as the power to cope with the many difficulties which face the co-operative movement at the present time.

OUR BOOK MARKET.

Any of the following books will be supplied at the prices named. Cash must always accompany orders.

Amateur Poultry - Keeper. By W. M. ELKINGTON. 120 pages. Fifteen illustrations. Price, 1/2 post free.

Incubators and their Management. By J. H. SUTCLIFFE. Fifth Edition. Illustrated. Price, post free, 1/2.

Lett's Poultry - Keeper's Account Book. Edited by LEWIS WRIGHT. Cr. 8vo. Post free in the United Kingdom, the Colonies, and foreign countries, 2/8.

Poultry and Egg Raising at Home. By W. M. ELKINGTON. Illustrated. Price, post free 1/2.

Poultry Culture for Profit. By Rev. T. W. STURGES, M.A. Third Edition. Cr. 8vo, 134 pages. Fully illustrated. Post free in the United Kingdom, the Colonies, and foreign countries, paper covers, 1/3; cloth, 1/9.

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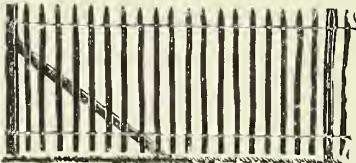
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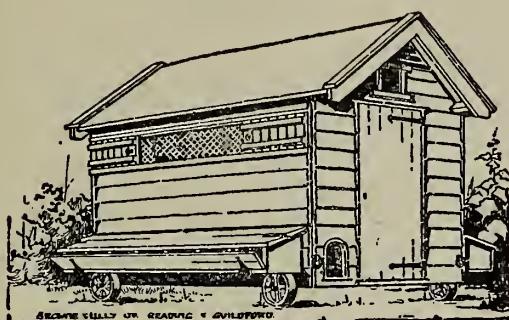
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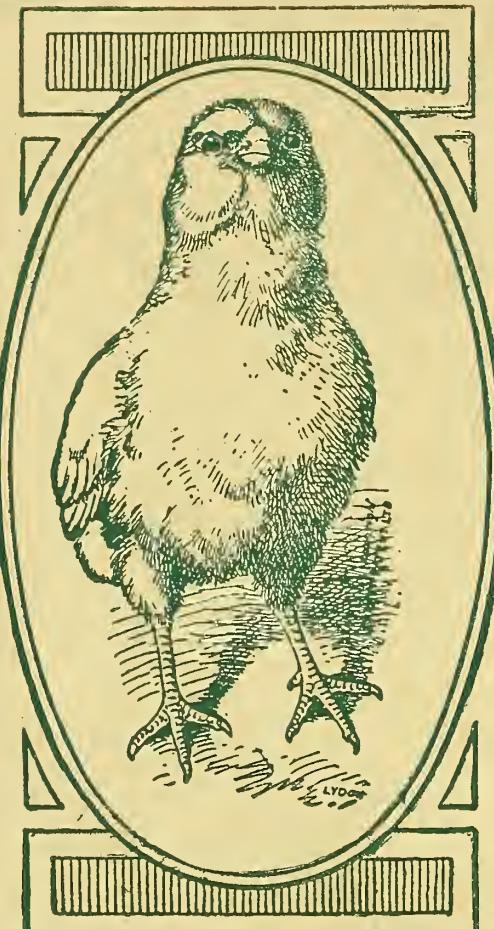
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